

# PACIFIC SEABIRDS



A Publication of the Pacific Seabird Group

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# PACIFIC SEABIRD GROUP

Dedicated to the Study and Conservation of Pacific Seabirds  
and Their Environment

The Pacific Seabird Group (PSG) was formed in 1972 due to the need for better communication among Pacific seabird researchers. PSG provides a forum for the research activities of its members, promotes the conservation of seabirds, and informs members and the public of issues relating to Pacific Ocean seabirds and their environment. PSG members include research scientists, conservation professionals, and members of the public from all parts of the Pacific Ocean. The group also welcomes seabird professionals and enthusiasts in other parts of the world. PSG holds annual meetings at which scientific papers and symposia are presented; abstracts for meetings are published on our web site. The group is active in promoting conservation of seabirds, including seabird/fisheries interactions, monitoring of seabird populations, seabird restoration following oil spills, establishment of seabird sanctuaries, and endangered species. Policy statements are issued on conservation issues of critical importance. PSG's journals are *Pacific Seabirds* (formerly the *PSG Bulletin*) and *Marine Ornithology*. Other publications include symposium volumes and technical reports; these are listed near the back of this issue. PSG is a member of the International Union for Conservation of Nature (IUCN), the Ornithological Council, and the American Bird Conservancy. Annual dues for membership are \$30 (individual and family); \$24 (student, undergraduate and graduate); and \$900 (Life Membership, payable in five \$180 installments). Dues are payable to the Treasurer; see the PSG web site, or the Membership Order Form next to inside back cover.

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## *Pacific Seabirds*

*Pacific Seabirds* publishes short peer-reviewed articles, reports of ongoing work, conservation news, and other items of importance to conservation of seabirds in the Pacific Ocean. The journal is published twice a year in spring and fall. Materials should be submitted to the Editor, except that conservation-related material should be submitted to the Associate Editor for Conservation. Information for contributors to *Pacific Seabirds* is published in each Fall issue. Back issues of the *Bulletin* or *Pacific Seabirds* are posted on the group's web site or may be ordered from the treasurer (see Membership/Order Form next to inside back cover for details). Submission deadlines are April 1 for the spring issue and October 1 for the fall issue; manuscripts may be submitted at any time.

## *Pacific Seabirds* Editor

**Vivian M. Mendenhall**, 4600 Rabbit Creek Rd., Anchorage, AK 99516, USA. Telephone (907) 345-7124; Fax (907) 345 0686; e-mail: fasgadair@attalascom.net.

## Associate Editor

Patricia Baird

## Associate Editor for Conservation

**Craig S. Harrison**, 4953 Sonoma Mountain Road, Santa Rosa, CA 95404, USA. Telephone: (202) 778-2240, Fax: (202) 778 2201, e-mail: charrison@hunton.com **Assistant Editors for Conservation:** S. Kim Nelson and Mark Rauzon.

## Assistant Editor for Regional Reports for This Issue

Hannahrose Nevins

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## Change of Address

Send changes of address to the PSG Treasurer, **Ron LeValley**, P.O. Box 324, Little River, CA 95456-0519, USA. Telephone: (707) 496-3326 (cell), (707) 937-1742 (work); fax: (707) 442-4303; e-mail: [membership@pacificseabirdgroup.org](mailto:membership@pacificseabirdgroup.org) or [ron@madriverbio.com](mailto:ron@madriverbio.com)

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## OFFICERS

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**Pat Jodice**, South Carolina Cooperative Fish and Wildlife Research Unit, G27 Lehotsky Hall, Clemson University, Clemson, SC 29634, USA. Phone: (864) 656-6190; e-mail: pjodice@clemson.edu

### Past Chair

**Tom Good**, Northwest Fisheries Science Center, 2725 Montlake Blvd. E., Seattle, WA 98112, USA. Phone (206) 860-3469; fax: (206) 860-3335; e-mail: tom.good@noaa.gov

### Chair-Elect

**Kim Rivera**, NOAA Fisheries, National Seabird Program, Alaska Region, P.O Box 21668, Juneau, AK 99802, USA. Telephone: (907) 586-7424; e-mail: kim.rivera@noaa.gov

### Vice-Chair for Conservation

**Craig S. Harrison**, 4953 Sonoma Mountain Road, Santa Rosa, CA 95404, USA. Phone: (202) 778-2240; e-mail: charrison@hunton.com

### Treasurer

**Ron LeValley**, P.O. Box 324, Little River, CA 95456-0519, USA. Phone: (707) 496-3326 (cell), (707) 937-1742 (work); fax: (707) 937-2868; e-mail: ron@madriverbio.com

### Secretary

**Heather Major**, Centre for Wildlife Ecology, Department of Biological Sciences, Simon Fraser University, 8888 University Dr., Burnaby, BC, V5A 1S6, Canada. Telephone: (867) 920-2291; e-mail: hmajor@sfu.ca

### Editor, Pacific Seabirds

**Vivian Mendenhall**, 4600 Rabbit Creek Rd., Anchorage, AK 99516, USA. Phone: (907) 345-7124; fax (907) 345-0686; e-mail: fasgadair@attalascom.net

## REGIONAL REPRESENTATIVES

### Alaska and Russia

**Adrian Gall**, ABR, Inc. - Environmental Research & Services, P.O. Box 80410, Fairbanks, AK 99708, USA. Phone (907) 455-6777 x125, fax (907) 455-6781, e-mail agall@abrinc.com

### Canada

**Ken Morgan**, Institute of Ocean Sciences. P.O. Box 6000, 9860 W. Saanich Rd., Sidney, B.C., Canada V8L 4B2. Phone: (250) 363-6537; fax: (250) 363-6390; e-mail: morgank@pac.dfo-mpo.gc.ca

### Washington and Oregon

**Don Lyons**, Oregon Cooperative Fish and Wildlife Research Unit, Dept. of Fisheries and Wildlife, Oregon State University, 104 Nash Hall, Corvallis, OR 97331, USA. Phone: (503) 791-2958; e-mail: lyonsd@onid.orst.edu

### Northern California

**Hannahrose M. Nevins**, Moss Landing Marine Labs, 8272 Moss Landing Road, Moss Landing, CA 95039. Phone: (831) 771-4422; fax (831) 632-4403; e-mail: hnevins@mlml.calstate.edu

### Southern California and Latin America

**Jennifer Boyce**, NOAA Restoration Center–Montrose Settlements Restoration, 501 West Ocean Blvd., Suite 4470, Long Beach, CA, USA. Phone: (562) 980-4086; cell: (562) 243-5015; e-mail: Jennifer.Boyce@noaa.gov

### Hawai‘i

**Holly Freifeld**, U.S. Fish and Wildlife Service, Migratory Birds and Habitat Programs, 911 NE 11th Ave., Portland, OR 97232, USA. Phone: (503) 231-6164; cell: (503) 936-3261; e-mail: holly.freifeld@fws.gov

### Non-Pacific United States

**Julie C. Ellis**, Tufts University, Cummings School of Veterinary Medicine, Barbour Building, 200 Westboro Rd., North Grafton, MA 01536, USA. Phone: (508) 887-4933, Fax: (508) 839-7946; e-mail: julie.ellis@tufts.edu

### Europe/Africa

**Linda Wilson**, Joint Nature Conservation Committee, Dunnet House, 7 Thistle Place, Aberdeen, AB10 1UZ, Scotland. Phone: +44 (0) 1224 655713; Fax: +44 (0) 1224 621488; e-mail: Linda.Wilson@jncc.gov.uk

### Asia and Oceania

**Yutaka Watanuki**, Graduate School of Fisheries Sciences, Hokkaido University, 3-1-1 Minato-cho, Hakodate, Hokkaido, Japan 040-8611. Phone: +81 (138) 46-8862; fax: +81 (138) 46-8863; e-mail: ywata@fish.hokudai.ac.jp

### Student Representative

**Laura McFarlane Tranquilla**, Dept. of Psychology, Memorial University of Newfoundland, St. John's, Newfoundland & Labrador, Canada, A1B 3X9. Phone: (709) 737-7668, fax: (709) 737-4000; email: lat@alumni.sfu.ca or l.mcfarlane.tranquilla@gmail.com

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# CONSERVATION REPORT

Compiled by Craig Harrison and Vivian Mendenhall

## SHORT-TAILED ALBATROSSES EXPAND BREEDING RANGE

In 1949, Oliver L. Austin famously declared Short-tailed Albatrosses (*Phoebastria albatrus*) to be extinct. The cause was largely that their most important colony on Torishima Island, in the Izu Islands of Japan, is an active volcano. An eruption in 1941 covered the whole island with lava, save for the northwest slope. In 1954 a Japanese expedition found 10 nesting pairs, which during the past 60 years have multiplied to over 2,600 birds, largely through the efforts of Hiroshi Hasegawa and colleagues. In 1988, Hasegawa found nesting Short-tails on Senkaku Retto, Southern Ryukyus.

In 2011, two new colonies have begun to form. Japan's Ministry of Environment announced in March that a Short-tailed Albatross observed at Mukojima, Ogasawara Islands, proved to be a two-year old male that had fledged from the island after translocation from Torishima. Fears of extinction from eruptions led to a project that translocated Short-tail chicks from Torishima to Mukojima in 2008. The first of those birds returned to Mukojima in February 2011, and by March, four three-year-old Short-tails had returned. One day, when these birds reach breeding age, a new colony may form there.

Beginning four years ago, a courtship began between two Short-tails began on Eastern Island, Midway Atoll, where individuals have been seen since 1939. The eight-year-old female laid an egg in December 2010, and it hatched in January 2011. She and her 24-year-old mate fed their chick every one to three days. The youngster survived being washed across the island by the tsunami in March, thanks to USFWS personnel

who returned it to its nest. In May, after months of steady feeding and growth, the chick was losing most of its downy look and began stretching and exercising its wings. The chick was banded on June 8. On 11 June, the bird wandered from its nest area to the shoreline, as the instinct to fly and paddle out to sea became stronger; it was last seen the evening of 15 June. This is the first documented Short-tailed Albatross ever to fledge in Hawai'i.

## JAPANESE EARTHQUAKE AND TSUNAMI KILL MIDWAY ALBATROSSES

The U.S. Fish and Wildlife Service (USFWS) estimates that more than 110,000 Laysan (*Phoebastria immutabilis*) and Black-footed Albatross (*P. nigripes*) chicks, about 22 percent of this year's albatross production at Midway Atoll National Refuge, died because of the March 2011 earthquake in Japan. The birds were swept away when the tsunami washed over Midway's three low-lying islands. USFWS also estimates that at least 2000 adults were killed. Many Bonin petrels (*Pterodroma hypoleuca*) may also have been lost, but precise numbers are difficult to estimate because this species nests in burrows that have not been extensively mapped.

## TWO SHORT-TAILED ALBATROSSES CAUGHT IN BERING SEA LONGLINE FISHERY

Two endangered Short-tailed Albatrosses were accidentally caught by longline vessels in the Bering Sea on 27

August and 14 September 2010. The first was a subadult, aged 7 years 10 months, taken just off the continental shelf west of St. Paul Island at 56° 37' N, 172° 57' W. The second was an immature, aged 3 years 10 months, caught on the shelf west of St. Matthew Island at 59° 20' N, 176° 33' W.

The vessels were fishing for cod using demersal longline gear, which involves multiple hooks on a line that rests on the sea floor. Albatrosses are usually hooked when the line is first deployed from the stern of the hook.

The Alaskan longline fleet is required by National Marine Fisheries Service (NOAA) Fisheries to use multiple seabird avoidance measures. Vessels greater than 58 feet (17.7 m) in overall length are required to use streamer lines under most conditions. The agency asks vessels to use extra caution when Short-tailed Albatrosses are present. Many individual captains within the fleet were already using bycatch deterrents in the early 1990s before NOAA required them. As field studies were done, typically through collaborative efforts between industry, Washington Sea Grant, NOAA Fisheries, and the USFWS, and as bycatch deterrent materials and methods were refined, many in the fleet continued to adopt these measures before regulatory requirements were generated. Overall bycatch of seabirds by this fleet has declined by about 80% since deterrents came into use, and no Short-tailed Albatrosses had been observed taken for 12 years, based on data collected by the numerous NOAA-certified observers on these vessels. Several agencies, including Washington Sea Grant, NOAA Fisheries, and USFWS are working with the Freezer Longline Coalition (an industry group) to explore potential reasons for these takes and to minimize the chances of further albatross bycatch.

—Shannon Fitzgerald, NOAA Fisheries

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### CATASTROPHIC FOREST FIRE DELIVERS HUGE BLOW TO ZINO'S PETREL

A massive forest fire on the island of Madeira killed several breeding adults of Zino's Petrel (*Pterodroma madeira*) and 65% of the season's chicks in August 2010. This species is Europe's rarest seabird and one of the rarest birds in the world, nesting only on a few mountain ledges in the rugged central massif of Madeira Island. Once on the edge of extinction, with numbers down to a few tens of pairs, the species has responded to intense conservation action over the past 20 years and currently numbers about 80 pairs. Forest fires ravaged parts of Madeira for weeks and eventually reached the central massif where many Zino's Petrel nestlings were still in their burrows. Three adults and 25 young were found dead, and only 13 young fledglings were still alive. The fire exacerbated soil erosion and several nesting burrows disappeared.

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### GULF OF MEXICO OIL SPILL RAISES CONCERN FOR PSG

The *Deepwater Horizon* oil well in the Gulf of Mexico (28° 44' N, 88° 23' W) blew out and exploded on 20 April 2010, killing eleven workers and injuring 17. Oil and methane gushed for three months at the sea floor, 5000 feet (1520 m) deep. By the time the wellhead was capped by British Petroleum (BP), 4.9 million barrels of oil and unknown amounts of methane had been released. More than 20 times as much oil was spilled than by the *Exxon Valdez* wreck in 1989, and more than 950 miles of coastline was oiled from Louisiana to Florida (USFWS data). It was the largest accidental marine spill in history (a larger one during the 1991 Persian Gulf war was intentional).

Investigations revealed that numerous mistakes by BP and its contractors

contributed to the disaster. Lawsuits are underway among various companies, and the U.S. government is considering possible criminal indictments.

Efforts at defense and cleanup began while oil was still flowing. Approximately 25% of the oil was siphoned into boats, burned at sea, or cleaned up from beaches and marshes; nearly 2 million gallons of dispersant were applied. Bacteria may also have degraded some oil and methane at sea. However, as much as 75% of the oil probably remained in the Gulf—amongst marsh vegetation, buried in beaches, and in the water. Oil and oil-derived compounds were entrained in deep currents below 1000 m, in a plume more than 35 km long.

Concern immediately arose over coastal birds. Just one segment of the Louisiana coast, Breton National Wildlife Refuge, hosted over 34,000 marine birds, including the largest tern colony in North America (5,000 pairs each of Royal Terns (*Sterna maxima*) and Caspian Terns (*Hydroprogne caspia*), plus other species), 2000 nesting pairs of Brown Pelicans (*Pelecanus occidentalis*), Black Skimmer (*Rhynchops niger*), gulls (*Larus spp*), American Oystercatchers (*Haematopus palliatus*), endangered Piping Plovers (*Charadrius melanotos*), and others. Breeding birds elsewhere in the region include the endangered Least Tern (*Sternula antillarum*), plovers, herons (Ardeidae), ibises (Threskiornithidae), and rails (Rallidae). Attempts were made to protect sensitive habitats with offshore booms and sand berms, but oil washed into the habitats anyway.

Outside the nesting season, the northern Gulf is used for staging or wintering by Northern Gannets (*Morus bassanus*), Magnificent Frigatebirds (*Fregata magnificens*), Brown Pelicans, gulls, terns, wading birds, shorebirds, and waterfowl.

The overall impact of the oil on marine wildlife is not yet known. More than 6000 dead birds were collected (of which 37% showed visible signs of oiling), in addition to more than 2000 oiled live birds, from Texas to Florida (USFWS, 2011; <http://www.fws.gov/>

[home/dhoilspill/collectionreports.html](http://www.fws.gov/home/dhoilspill/collectionreports.html)). The highest numbers collected were Laughing Gull (*Larus atricilla*), Brown Pelican, Northern Gannet, Royal Tern, and Black Skimmer. Sea turtles, marine mammals, fish, and invertebrates also were oiled. The actual impact on populations may be much higher than actually observed, since the majority of carcasses may disappear at sea or be scavenged. Oil remains in coastal nesting habitats, where marshes may continue to die back, and toxic compounds remain buried in beach substrates (USFWS, 2010; <http://www.fws.gov/home/dhoilspill/pdfs/DHJICFWSOilImpactsWildlifeFactSheet.pdf>). Pelagic habitats and benthic communities may also be impacted, including in the Atlantic Ocean if oil has been carried there by deep currents. Effects on bird populations may last for years, due to loss of subadults and sublethal effects on breeders. ([DHJICFWSOilImpactsWildlifeFactSheet.pdf](http://www.fws.gov/home/dhoilspill/pdfs/DHJICFWSOilImpactsWildlifeFactSheet.pdf)). Pelagic habitats and benthic communities may also be impacted, including in the Atlantic Ocean if oil has been carried there by deep currents. Effects on bird populations may last for years, due to loss of subadults and sublethal effects on breeders.

Seabirds nested again in 2011 at Breton National Wildlife Refuge. However, no information from federal studies on spill impacts can be released until legal issues have been resolved, according to Kevin Reynolds, Science Advisor to the Department of Interior for the Natural Resource Damage Assessment process (email to VMM, 23 November 2011). (Similar restrictions were imposed after the Exxon Valdez spill.)

The U.S. government reviewed and reorganized the agency that is supposed to oversee oil drilling. The Minerals Management Service (MMS) was found to have allowed irresponsible planning and operations by oil companies. The agency was restructured and has been renamed the Bureau of Ocean Energy, Management, Regulation, and Enforcement (BOEMRE). It is now reviewing oil company plans more stringently.

The Gulf of Mexico oil spill concerns PSG deeply, even though it did not

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affect the Pacific. Several western-state biologists helped with response to the spill (see “Regional Reports” for a few descriptions). For the future, we are waiting to see how the new BOEMRE will demonstrate its effectiveness. Will rigorous oversight really be applied to oil and gas drilling in the Gulf and elsewhere? Hazards of a spill could be even greater in Arctic waters than in the Gulf of Mexico, yet Shell Oil already has leases and some of its permits to drill in Alaska’s Chukchi Sea, and more leases may be offered soon in Cook Inlet and the Beaufort Sea.

Even if response plans start looking good on paper, the government cannot respond quickly to an oil spill off northern Alaska. The nation is woefully unprepared for any maritime commerce there, let alone a spill. We have one operational icebreaker, and none that can operate in heavy winter ice. And in any case, the nearest U.S. Coast Guard base is in Kodiak, in southcentral Alaska—1600 km (by sea) from Alaska’s north coast, which is farther away than Seattle!

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### PSG SUPPORTS PALMYRA RAT ERADICATION PROJECT

PSG wrote in April 2011 to USFWS in Honolulu, strongly supporting the agency’s proposed plan to eradicate ship rats (also known as black rats; *Rattus rattus*) at Palmyra Atoll to aid in the conservation of seabirds and their habitat. PSG noted that rats are notorious for their depredations of eggs, chicks and adults of the smaller seabird species. The successful eradication of rats on Midway in the 1990s is but one example of how such a project allowed seabirds such as Bonin Petrels and storm-petrels to increase. PSG suggested that small and vulnerable seabird species such as Sooty Terns (*Onychoprion fuscata*), Brown Noddies (*Anous stolidus*) and Black Noddies (*A. minutus*) would almost immediately benefit from the removal of rats. In

addition, many of the eight seabird species that were apparently extirpated from Palmyra by rats could potentially reappear, some very quickly. These species include Audubon’s Shearwater (*Puffinus lherminieri*), Christmas Shearwater (*P. nativitatis*), Wedge-tailed Shearwater (*P. pacificus*), Phoenix Petrel (*Pterodroma alba*), White-throated Storm-Petrel (*Nesofregetta fuliginosa*), Bulwer’s Petrel (*Bulweria bulwerii*), Blue Noddy (*Procelsterna cerulea*), and Gray-backed Tern (*Onychoprion lunata*). PSG also noted that since 1985, USFWS’s Regional Marine Bird Policy has stated the goal to “remove all introduced predators from marine bird colonies on all National Wildlife Refuges and encourage their removal from all other colonies.”

PSG stated that this project must aim for complete eradication of the rats, because we should avoid situations that require perpetual control, funding, and vigilance. We noted that half-measures are inefficient and waste scarce conservation resources. For this reason PSG supported the use of the anticoagulant poison brodifacoum, which is capable of killing a rat after a single feeding. We noted that the technique of aerial broadcasting of bait has greatly improved since a failed attempt to eradicate rats on Palmyra in 2001-2002. The method has succeeded recently at Rat Island (Alaska) and Anacapa Island (California). We noted that a review of the rat eradication at Lehua Island (Hawai’i) found the project failed because it used diphacinone, a weaker rodenticide, and there were unreasonable restrictions on its use near the shoreline. PSG stated that the chances of success will be improved by using large amounts of bait with high toxicity, because hermit crabs, not rats, will consume much of the bait. During summer when bird populations are generally low, a small number of non-breeding Bristle-thighed Curlews (*Numenius tahitiensis*) may be present at Palmyra. PSG supported proactive mitigation of risk to the curlews.

This project was carried out in two phases of widespread bait application in June 2011. Nine curlews were placed in cages and have been doing well, as of

mid-July. The project continues to be monitored for any signs of rats that have not been killed.

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### RODENT ERADICATION IN THE GALAPAGOS

Non-native, invasive rodents in the Galápagos Archipelago, such as black rats, Norway rats (*R. norvegicus*), and house mice (*Mus musculus*) pose a great threat to the continued existence of the unique and endemic flora and fauna. Invasive rodents prey on native and endemic plants and animals and compete for limited resources. To address this issue, the Galápagos National Park, supported by Island Conservation, Charles Darwin Foundation, Bell Laboratories, The Raptor Center of the University of Minnesota, and the Durrell Wildlife Conservation Trust are working together to remove invasive rodents. A pilot project in 2008 eliminated rodents from the small island of North Seymour, using hand dispersal of baits. In January 2011, the partners completed the first full phase of the restoration project, applying brodifacoum baits by helicopter on seven medium-sized islands—Rábida, Bartolomé, Sombrero Chino, North Plaza, the Beagle islets, and three of the Bainbridge Rocks (a total of 704 hectares). To mitigate the potential risk of secondary poisoning, twenty Galápagos Hawks (*Buteo galapagoensis*) were captured and held in temporary aviaries. All hawks were captured without incident in January and safely returned to the wild in February 2011. (More information on the hawk mitigation is at <http://blog.durrell.org/index.cfm/2011/5/6/Rounding-up-Rbidas-hawks.>)

The islands included in the first phase are home to 12 unique Galápagos species considered by the International Union for Conservation of Nature to be threatened with extinction. Seabird species that will benefit from the restoration include the endangered Galápagos Penguin (*Spheniscus mendiculus*), Audubon’s Shearwater, Band-rumped

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Storm-Petrel (*Oceanodroma castro*), and five additional species. The future phases of restoring islands in the Galapagos Archipelago include the restoration of Pinzón and Floreana Islands. Restoring those islands will benefit 23 populations of 12 seabird species, including the critically endangered Galapagos Petrel (*Pterodroma phaeopygia*) and vulnerable Lava Gull (*Leucophaeus fuliginosus*). Because rodents can be difficult to detect at low densities, the islands will be monitored for two years to confirm that they are rodent-free.

—Amy Carter (with additional information from GNP News for 20 January 2011; <http://www.galapagos.org/2008/index.php?id=269>, accessed 26 August 2011)

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### PSG EXPRESSES CONCERN ABOUT STATUS OF KITTLITZ'S MURRELET

PSG wrote to USFWS in Anchorage in February 2011 to express its concern about the status of Kittlitz's Murrelet (*Brachyramphus brevirostris*). PSG supports the evaluation for listing of this species under the U.S. Endangered Species Act (ESA). We urged USFWS to base its decision on the very best scientific information that is available. We noted that most biologists who are familiar with this species recognize the difficulties in estimating population trends for this highly mobile species and stated that assessing reproductive success and survival must be considered in their decisions.

PSG noted that relative to many other seabirds, little is known about the life history, marine and terrestrial habitat requirements, and ecology of Kittlitz's Murrelets. Populations are small and geographically clustered; the current world population is estimated to be between 30,900 and 56,800 individuals. During the breeding season, this non-colonial species often feeds in coastal waters associated with tidewater glaciers, outflows

of glacial streams, and recently deglaciated areas, but it also occurs in smaller numbers in marine waters adjacent to the Aleutian Islands and in northern Alaska. In glacial fjords of south-central Alaska, Kittlitz's Murrelets are more likely to occur near tidewater glaciers where near surface prey was abundant. The murrelets feed primarily on schooling forage fishes and large zooplankton throughout the year. The timing and route of migration and the winter range of the Kittlitz's Murrelet are poorly known. However, recent satellite telemetry data confirms that this species leaves the glaciated fjords of south-central and southeastern Alaska in late summer and fall and flies directly to the southern Bering Sea, where the sea ice edge extends in the winter months. Kittlitz's Murrelets do not breed until 2–4 years of age, lay only one egg per clutch, and may not breed every year. We also suspect that, in some years, there is widespread absence of breeding effort in this species, and scattered evidence suggests that recruitment is poor even in years when they do breed. For these reasons, PSG stated that recovery of declining populations can be expected to be slow, even if effective actions are taken to stem the decline.

PSG wrote that, in the short term, Kittlitz's Murrelet populations will be most responsive to management actions that reduce direct mortality and improve survival. A principal threat that can be mitigated effectively is the incidental take of murrelets in some commercial salmon gillnet fisheries that are managed by the state of Alaska. As part of the National Marine Fisheries Service's Alaska Marine Mammal Observer Program, seabird bycatch is sampled wherever gillnets are monitored in Alaska. In those studies, Kittlitz's Murrelet mortality has been recorded in both driftnets and set-nets. However, we observed that there is no accurate statewide estimate of mortality in salmon gillnet fisheries, because not all gillnet fisheries have been sampled.

Kittlitz's Murrelets also would benefit in the short term from several other actions: prevention of oil spills, and oil-spill response planning; reducing human

activities that artificially increase populations of predators (e.g., Bald Eagles, *Haliaeetus leucocephalus*); avoiding disturbance of nesting birds; protecting nesting and foraging habitats; and minimizing vessel-caused disturbance in favored foraging areas (e.g., near glaciers that are frequented by sight-seeing tour vessels). Finally, we noted that in February 2010, PSG sponsored a symposium to summarize the status and trends of Kittlitz's Murrelet in Alaska and Russia, and that peer-reviewed proceedings would be available soon. [Editor's note: The symposium was published in August 2011 in *Marine Ornithology* 39(1), which is available online at <http://www.marineornithology.org>]

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### PSG SUPPORTS SEABIRD HABITAT CONSERVATION PLAN ON KAUAI

PSG wrote to USFWS in Honolulu in November 2010 concerning the proposed Habitat Conservation Plan (HCP) that was prepared by the Kauai Island Utility Cooperative (KIUC). The HCP describes actions that the utility will implement, at a cost of \$11 million, to minimize, mitigate and monitor the incidental take of species listed under the ESA. PSG noted that it had sent numerous letters to USFWS and KIUC during the past decade on these issues and that we were frustrated and disturbed that the HCP process had already taken more than six years.

The draft HCP is in support of an interim "incidental take permit" for the utility, which can be granted under the ESA. The permit will be an interim step that will last three to five years, during which time extensive studies will be undertaken to improve both our knowledge and the conservation of the endangered Hawaiian Petrel (*Pterodroma sandwichensis*), the threatened Newell's Shearwater (*Puffinus newelli*), and the Band-rumped (Harcourt's) Storm-Petrel, a candidate species for ESA listing. After

## CONSERVATION REPORT

the interim permit expires, a more robust HCP will be submitted. PSG's comments focused on Newell's Shearwaters, because that species seems to have the gravest conservation issues on Kauai at this time. [See also the following news item.]

PSG generally supported the conservation measures in the draft HCP, because they represent progress over the status quo. We stated that all the necessary resources (utility, federal and state) should be devoted to gaining full understanding of the biology and conservation problems of these seabirds on Kauai. It is apparent to all concerned that we lack the scientific information needed to develop an effective conservation program.

Conservation efforts have so far focused on one major problem. During the autumn fledgling season, Newell's Shearwaters and Hawaiian Petrels head out to sea from their mountainside nesting colonies, but they are attracted to bright lights such as street lamps, hotels, and resorts. Trapped in the glare, the confused birds circle repeatedly until they fall to the ground from exhaustion or strike buildings or wires, and they soon die. PSG noted that the Save Our Shearwater program has operated since the 1980s and has retrieved and released 30,000 downed shearwaters. The focus on light attraction has been necessary, and we recommended addressing the proposal to dim lights and to bury transmission lines or move them inland.

However, it is not clear that artificial lighting is the only cause of apparent declines in the Newell's Shearwater population. PSG stated its strong belief that, in order to reverse the decline, we must have an accurate diagnosis of all pertinent conservation issues. All challenges to understanding shearwater populations on Kauai need to be fully explored before threats to the seabirds can be successfully mitigated.

PSG supported improved population estimates for Newell's Shearwaters. The species was thought to be near extinction until a pig hunter discovered a colony on Kauai in 1967. In the late 1980s the estimates were 4,000 to 6,000 pairs; the center of the species' range is on

Kauai because exotic Indian mongooses (*Herpestes javanicus*) have not become established there. The colonies are very difficult to find and census, which makes accurate population estimates difficult. At-sea surveys in 1995 estimated 84,000 individuals. We observed that an increase from "near extinction" in 1967 to 84,000 birds in only 28 years suggests either that there are very large fluctuations in the population of this species, or that our estimation procedures need great improvement. Some radar studies indicate a decline of as much as 75% between 1993 and 2008; however, there have been no radar studies on half of Kauai. We noted that the population estimate of the late 1980s may have been low; the mid-point estimate would be 5,000 breeding pairs, or a total of about 20,000 individuals (assuming the non-breeding and breeding populations are about equal). However, the possibility must be considered that Spear's estimate of 84,000 was much too high, which would mean that differences in estimation techniques might account for some of the apparent decline.

PSG also pointed out that while the HCP found that the number of fledglings retrieved by the Save Our Shearwater program has declined, it may be misplaced to infer population trends from the fledgling data. This is because significant efforts have already been made to diminish the attraction of fledgling shearwaters to lights and structures. (One important step has been to shield all street lights on the island). If shielding were successful, fewer fledglings would be attracted to lights. It is important to clarify this issue, so that conservationists and agencies don't spend a lot of unnecessary time and money to fight a battle that has already been won.

PSG also endorsed studies to determine the extent of predation on eggs, chicks and adults by feral cats, dogs, rats, and pigs. Rat and pig populations may have exploded with the demise of the sugar cane industry, which terminated efforts by cane workers to control these animals. In addition, biologists have observed extensive predation of Newell's Shearwaters by owls. PSG stated that,

where feasible, efforts should be made to minimize or eliminate threats from predators. We agreed with the HCP that rat control is likely to be efficacious only if biologists are allowed to employ aerial broadcasting of the most effective rodenticides.

Finally, a cross-fostering program should be undertaken, in order to expand shearwater nesting to suitable predator-free locations throughout Kauai. We noted that in the late 1970s, Vernon Byrd successfully transplanted Newell's Shearwaters to nesting areas at Kilauea Point National Wildlife Refuge, where terrestrial predators such as rats, cats, dogs and pigs are easily controlled.

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### USFWS ISSUES INCIDENTAL TAKE PERMIT FOR KAUAI SEABIRDS

In May 2011, USFWS issued a permit to Kauai Island Utility Cooperative (KIUC) that specifies actions the utility must take to reduce the number of Hawaiian Petrels, Newell's Shearwaters, and Band-rumped Storm-Petrels that are killed and injured each year by its structures and lighting, and to offset unavoidable harm to these species. PSG had advocated many of these actions for over a decade, and had generally commented favorably on KIUC's documents in support of the permit [see preceding news item].

The issuance of the permit occurred in the wake of litigation. In March 2010, several environmental groups sued the company for violations of the ESA, and in May 2010, the U.S. Justice Department obtained an indictment of KIUC for criminal violations of the ESA for killing protected seabirds without a permit. KIUC entered into a plea agreement in December 2010.

The permit requires KIUC to carry out actions described in the HCP. These include minimizing bird fatalities in

## CONSERVATION REPORT

three key flyways on Kauai, by lowering its power lines, obscuring them with fast-growing trees, or attaching them to bridges. The HCP also requires KIUC to fund efforts to restore and protect nesting colonies at Limahuli and Hono o Nā Pali (two reserves on Kauai); support of these efforts would help to offset the bird deaths caused by KIUC's operations.

The company has yet to obtain a permit from the State of Hawaii. In February 2011, the Hawaii Board of Land and Natural Resources refused to approve the proposed HCP, pending an environmental review by the state. That review will have some major overlap with the HCP, but it will also address impacts on humans, including cultural impacts, socio-economic impacts, traffic, and noise. This additional work will require additional resources and is not expected to be complete until sometime in 2012

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### SIX PENGUIN SPECIES LISTED IN U.S. AS THREATENED OR ENDANGERED

USFWS listed five penguin species as threatened under the ESA in August 2010: one in South America (Humboldt, *Spheniscus humboldti*), and four in New Zealand (Yellow-eyed, *Megadyptes antipodes*; Fiordland Crested, *Eudyptes pachyrhynchus*; White-flippered, *Eudypula minor albosignata*; and Erect-crested, *E. sclateri*). The agency listed the African (Jackass) Penguin (*Spheniscus demersus*), a species native to Namibia and South Africa, as endangered in October 2010.

Several environmental groups had petitioned USFWS to list the birds, arguing that climate change is undermining their coastal habitat. USFWS concluded that while climate change is altering their habitat, there was not enough information to predict how those changes will affect the species. The penguins were listed due to threats from other man-made changes

to their habitat such as development and deforestation. The African Penguin population has declined over 60 percent during the past 28 years, due to declines in the food base and competition for food with the fishing industry and with Cape fur seals. The African Penguin's population decline is also attributed to habitat modification and destruction, predation, and oil spills.

Because all the listed penguins are outside of the U.S., USFWS does not designate protected habitat. The foreign listings allow the U.S. government to provide financial assistance to international conservation efforts, and to restrict imports and exports under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

gested establishing no-disturbance areas around sensitive seabird colonies during nesting season, and, in particular, protecting Marbled Murrelets (*Brachyramphus marmoratus*), Tufted Puffins (*Fratercula cirrhata*), Common Murres (*Uria aalge*), and Black Oystercatchers (*Haematopus bachmani*). Finally, PSG asked Oregon to protect shoreline areas to conserve Black Oystercatchers and Harlequin Ducks (*Histrionicus histrionicus*), and to manage activities on public lands adjacent to seabird colonies to deter scavengers and minimize disturbance.

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### CONSERVATION OF THE ROSS SEA

In August 2010, PSG wrote to Ambassador Don MacKay, Chair of the Commission of the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) to support the designation of marine protected areas (MPAs) in the Southern Ocean. PSG applauded CCAMLR's recent efforts to identify and designate a network of eleven potential MPAs throughout the Southern Ocean, to ensure the preservation of the area's biodiversity. We urged the use of sound science in making such decisions.

Specifically, PSG said we are encouraged to know that the Ross Sea, including its shelf and slope, is being considered as part of an MPA network.

PSG stressed the importance of addressing the Ross Sea's assemblage of upper-trophic level mobile organisms, such as large predatory fish, seabirds, pinnipeds, and cetaceans. We noted that the loss in other oceans of such apex predators and mesopredators have had profound ripple effects on benthic communities. This emphasizes the importance of all components of a marine ecosystem to the maintenance of its diversity and functioning. MPAs are a well-proven tool in marine conservation and biological

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### PSG SUPPORTS MARINE PRESERVES IN OREGON

PSG wrote the Oregon Department of Fish and Wildlife in October 2010 to support Oregon's use of Marine Reserves and Marine Protected Areas as tools to help protect, sustain, and restore nearshore ecosystems. PSG noted that Oregon's approach complements efforts by Washington and California to manage the California Current in an ecosystem-based manner. We urged that successful conservation efforts should include all relevant scientific disciplines to design a system of Marine Reserves and Marine Protected Areas. Seabirds within the California Current System are an integral component of that ecosystem and should be included in any strategy to enhance marine biodiversity. We noted that there are over 66 seabird colonies within the three ecological areas that are currently under consideration.

PSG urged Oregon to consider supporting research on the ecology and biology of forage species, and to consider banning or restricting forage fisheries within Marine Protected Areas. PSG sug-

## CONSERVATION REPORT

management, if their designation is based on science.

PSG stated that while no part of the world's oceans has escaped the anthropogenic influences, the Ross Sea may be the least-affected and most natural stretch of ocean remaining on Earth. It is also one of the centers of climate change research. Therefore, it provides an increasingly rare opportunity for scientists to learn about ecosystem function in the face of climate change, without the complicating factors in other areas. Furthermore, the Antarctic Treaty gives us the responsibility to preserve the Antarctic for peace and science. For all these reasons, the Ross Sea should be protected.

Finally, PSG stressed that, even though the Ross Sea is just 2% of the Southern Ocean (i.e., south of the Antarctic Polar Front), the waters, shelf, and shelf slope of this sea support globally significant populations of Adélie Penguins (*Pygoscelis adeliae*, 38%), Emperor Penguins (*Aptenodytes forsteri*, 26%), Antarctic Petrels (*Thalassoica antarctica*, about 30%) and Snow Petrels (*Pagodroma nivea*). All these species are present for all or much of the year. Other seabird species, such as Sooty Shearwaters (*Puffinus griseus*), can be found near or on waters over the Ross Sea slope. PSG concluded that that the weight of scientific evidence would support CCAMLR including the Ross Sea's continental shelf and slope when

it designates its network of MPAs across the Southern Ocean.

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### MARINE PLASTIC POLLUTION

A 22-year study published in *Science* in August 2010 found that the amount of plastic in a floating junkyard in the Atlantic Ocean has not increased. The expanse of plastic trash lies at about the same latitude as Atlanta, Georgia, USA. Researchers at Woods Hole made annual trips to study more than 64,000 individual plastic pieces, collected at 6100 locations. Plankton nets skimmed the surface to collect the tiniest pieces of plastic, which were later studied by students who picked out the plastic with tweezers.

The scientists found significant year-to-year changes in the amount of plastic; however, averaging over time, they found no significant increase. It was noted that the amount of plastic trash has generally increased, but it does not seem to be accumulating in the Atlantic Ocean.

A second project in 2008 to study a plastic patch in the Pacific, by Professor Angelique White at Oregon State University, was funded by the National Science Foundation. White concluded in January 2011 that reports of the patch

being twice the size of Texas are grossly exaggerated; the size of the Pacific plastic "patch" is actually less than 1% of Texas's geographic size. The data suggest that plastic contamination may not have increased at all during recent decades, despite the greater use of plastic, which would be similar to the situation in the Atlantic. White also denounces claims that the ocean has more plastic than plankton, or that the patch has grown tenfold each decade since the 1950s, as misleading. She observes that the hyperbole about the problem undermines scientific credibility. She notes that the contamination is dispersed in the water, typically beneath the surface. White's expedition found that photosynthetic microbes such as algae were thriving on many tiny plastic particles, and that plastic can absorb some toxins. However, she added, those same toxin-laden particles can be eaten by fish and seabirds, thereby entering the food chain. Birds and marine mammals are drawn to eat larger pieces of bright plastic, which can harm them.

The Algalita Marine Research Foundation in California first spotlighted the ocean pollution after a 1999 expedition and reported a garbage patch of mostly plastic that could be the size of Texas. A spokesman for the foundation concedes that the plastic pollution, which is found scattered in ocean samples as far west as the International Dateline, is not really even a patch.

# PSG NEWS

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## JOHN COOPER VOTED HONORARY MEMBER OF PSG

In 2010, PSG approved Bylaws revisions that introduced the membership category of Honorary, defining it as "...individuals who are selected by a unanimous decision by the Executive Council for outstanding work in seabird science or conservation." At their September meeting the same year, EXCO voted to honor John Cooper as our first Honorary Member.

John has had a distinguished career in seabird research and conservation in South Africa, including at the FitzPatrick Institute of African Ornithology and the Animal Demography Unit at the University of Cape Town. He also initiated and coordinated the Seabird Conservation Programme of BirdLife International. In 1972, John founded *Marine Ornithology*, which he edited and published for 28 years. At that time he was joined by an international board of editors, with support from PSG (*Pacific Seabirds* 27:14, 2000). John remains Forum Editor of the journal.

John also will receive PSG's Lifetime Achievement Award at our February 2012 meeting in Hawai'i. *Pacific Seabirds* will publish a biography and appreciation of him soon after.

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## PSG ELECTIONS FOR AUGUST 2010

PSG's Bylaws state that new members will join the Executive Council at the conclusion of each Annual Meeting. PSG usually holds elections in autumn, for EXCO members who will start early the next year. However, since we had two meetings in 2010 (in February and September), an election was held in August for members who took their seats in September. These members will have extended terms, lasting until the next PSG meeting in 2012 in Hawaii.

Here are the results for the election of August 2010, which were announced at the Victoria meeting:

### OFFICERS

- Chair-Elect Kim Rivera
- Secretary Heather Major
- Vice-Chair for Conservation Craig Harrison (re-elected)

### REGIONAL REPRESENTATIVES

- Canada Ken Morgan (re-elected)
- Washington/Oregon Don Lyons (re-elected)
- Southern California/Latin America/ Hawaii Jennifer Boyce
- Non-Pacific United States Julie Ellis (re-elected)

Pat reports that some write-in candidates appeared on the August 2010 ballot. She planned to query them about running in the next election, in late 2011.

Everyone is invited to nominate EXCO candidates for an election; please send Pat their names and e-mail addresses at [kahiltna@gmail.com](mailto:kahiltna@gmail.com)

Please note that students are eligible for any and all EXCO positions!

**--Patricia Baird**

# MEETING NEWS

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## PSG'S 38TH ANNUAL MEETING AT THE 1ST WORLD SEABIRD CONFERENCE

After four years of planning, the First World Seabird Conference was a huge success. Almost eight hundred people from 40 nations filled the Victoria Conference Centre in Victoria, British Columbia, on 7-11 September 2010. Twenty-six seabird professional and research organization from around the world helped organize and present the conference.

The conference opened with a videotaped welcome speech by His Royal Highness, Charles, the Prince of Wales. There were five concurrent sessions to accommodate the 250 oral presentations (evenly split between invited and contributed papers), in addition to around 370 posters. Thirteen special sessions featured invited speakers, and contributed papers were grouped in another 14 sessions. Fifteen workshops were held, including discussion of plans for worldwide seabird databases and a possible international seabird organization. (More information and conference summaries are at <http://www.seabirds.net>) Everyone took the opportunity to consult with colleagues, including many with whom they had corresponded but whom they had never had a chance to meet in person.

There were plenty of events besides the scientific. Booths were occupied by vendors and conservation groups (including PSG). There were professional and amateur seabird films, an art exhibit, a silent auction, and field trips. At least one person fulfilled a decades-long ambition to Take Tea at the Empress Hotel.

PSG held its 38th Annual Meeting concurrently with the other seabird groups present at the WSC. PSG had its regular meetings of the Executive Council, the Business and Conservation Meetings, and meetings of all of its named Committees. (A summary of the ExCo minutes will be published in *Pacific Seabirds*, as usual, after they are approved by the ExCo). It was decided that PSG would not present Lifetime or Special Achievement Awards at the banquet, since the banquet was not attended exclusively by PSG members.

PSG members contributed hundreds of hours on committees that organized the event, along with international colleagues. David Irons was chair of the International Steering Committee, which comprised members from 14 nations. Ron LeValley, PSG Treasurer, did the financial accounting. Patrick Jodice, as PSG Chair-elect, served as Scientific Program Chair (assisted by Pablo Yorio and Norm Ratcliff); Patrick O'Hara was chair of the Local Organizing Committee (Jo Smith and Louise Blight served during early preparations). Other committees included Fundraising (Bill

Sydeman, chair), Travel Awards (Ken Morgan and Caio Carlos, co-chairs), Student Paper Awards (Mark Tasker, Pablo Yorio, and Nicholas Carllile, co-chairs), and Databases (John Croxall, Scott Hatch, and Ben Lascelles, co-chairs).

In addition, in this joint meeting, PSG provided the fiscal oversight that such a large undertaking needs. The EXCO reviewed and approved budgets, and PSG members had input regarding financial and logistic advice, based on their experience at previous meetings. PSG's treasurer also served as treasurer of the WSC meeting and PSG's chair-elect served as the program chair. The EXCO also decided that PSG would accept all financial risk for the WSC, as it usually does in any meeting, (i.e., if there was a funding shortfall, PSG would cover bills to the conference center and others). As in most PSG meetings, the joint PSG meeting at the WSC ended with a net profit, gleaned mainly from the high attendance of scientists world-wide. The success of the joint conference was due to the attendance of, and support from, scientists and scientific organizations all over the world. The Steering and Local Committees raised funds which were donated to the PSG from various NGOs, government agencies, and individuals to help with things like travel grants, a seabird database, and to run the meeting. These donations to PSG totalled over \$250 K. Those who won grants for PSG have already written their final reports to these groups, and all reports have been approved by the granting agencies.

# REGIONAL REPORTS

These Regional Reports cover late 2009 to October 2010 (as reflected in the date of this issue, Fall 2010). The Regional Reports submitted in Fall 2011 will be published in an upcoming issue of *Pacific Seabirds*. (The Editor apologizes for the delays in publication.)

## RUSSIA

Compiled by Adrian Gall

In 2010, **Dr. Maria Ushakova** (Severtsov Institute of Ecology and Evolution, Russian Academy of Science [Severtsov Institute], Moscow) continued past studies (2001–2005) of the evolution, ecology, distribution and survey methods of Tufted Puffins (*Fratercula cirrhata*), Spectacled Guillemots (*Cephus carbo*), and Rhinoceros Auklets (*Cerorhinca monocerata*) in the southern Kuril Islands, Russia.

**Victor Zubakin** (Severtsov Institute), **Elena Zubakina** (Russian Bird Conservation Union, Moscow), and **Anna Klenova** and **Julia Kolesnikova** (both of Lomonosov Moscow State University) spent the 2010 field season on Talan Island, Sea of Okhotsk (59° 18' N, 149° 05' E). In collaboration with colleagues **Alexander Andreev** and **Elena Golubova** (Institute of Biological Problems of the North, Magadan) they studied the communication behavior of two closely related species of auklets, Crested (*Aethia cristatella*) and Parakeet (*Cyclorrhynchus psittacula*) Auklets. They looked for signatures indicating individuality, sex, and caller's quality in calls and explored the influence of the social environment on parameters of calls and visual displays. They also studied the ontogenesis of vocal repertoire in these species. In addition to behavioral studies, they monitored the population, breeding success and annual survival of Crested Auklets. The population of Crested Auklets on Talan Island has declined over the past 20 years from an estimated 1,000,000 in 1990 to 250,000 in 2008 and to about 180,000–200,000

in 2010. In 2010, the breeding success of Crested Auklets was extremely low (they found no fledglings on the island). However, the annual survival of this species was relatively high (76 of 112 adults banded in 2008–2009 were re-sighted in 2010), so survival was approximately 68%, which is similar to estimates from 1989–1991. It is interesting to note that they caught two birds banded in 1989–1990 on the same study area, indicating that these birds were over 20 years old. They hope to continue these studies on Talan Island in the coming years.

**Tom Van Pelt** (North Pacific Research Board, Anchorage) continued working with Russian partners **Andreev**, **Yuri Artyukhin** and **Peter Vyatkin** (Kamchatka Branch, Pacific Geographical Institute), and **Nikolai Konyukhov** (Severtsov Institute of Ecology and Evolution, Moscow) on studies of Kittlitz's Murrelets (*Brachyramphus brevirostris*) and other mutual conservation and research interests.

**Falk Huettman** (University of Alaska Fairbanks) continued analyzing data on water birds in the coastal Sea of Okhotsk region. During his sabbatical he is in the process of writing up these data as manuscripts, public survey data, and metadata.

(National Park Service [NPS]), **Paul Lukacs** (Colorado Division of Wildlife), **Steve Lewis** (USFWS), **Nick Hatch** (USFWS and Oregon State University [OSU]), and **Sarah Schoen** (USFWS). They captured and banded 283 Kittlitz's Murrelets (*Brachyramphus brevirostris*), including five from previous years, and 23 Marbled Murrelets (*B. marmoratus*) in Icy Bay (2002–present). They attached radio transmitters to 75 Kittlitz's using three different attachment techniques to evaluate bird behavior and transmitter retention. In cooperation with **John Piatt**, **Erica Madison**, **Mayumi Arimitsu**, and **David Douglas** (U.S. Geological Survey [USGS]), they attached six prototype 5 g solar satellite transmitters to Kittlitz's Murrelets. In addition, they conducted at-sea surveys, monitored active nests, collected blood and feather samples for genetic and diet information, and conducted at-sea behavioral watches.

In 2010, **Kissling** and her crew also launched a study of the influence of aerial predators, primarily Peregrine Falcons (*Falco peregrinus*) and Bald Eagles (*Haliaeetus leucocephalus*), on the local Kittlitz's Murrelet population in Icy Bay. They captured and attached satellite transmitters to both raptor species and will evaluate movements of prey (murrelets) in relation to those of predators (raptors). They also set up camera systems at raptor nests and collected prey remains to attempt to quantify the number of Kittlitz's Murrelets taken during the breeding season. This entire project involves multiple partners and will continue through the 2011 field season.

**Sadie Wright** and **Karen Blejwas** (Alaska Department of Fish and Game [ADF&G], Division of Wildlife

## ALASKA

Compiled by Adrian Gall

### SOUTHEAST ALASKA

Murrelets were the focus in 2010 for **Michelle Kissling** (U.S. Fish and Wildlife Service [USFWS]), **Scott Gende**

## REGIONAL REPORTS • Alaska

Conservation) continued their work examining the overlap between Kittlitz's and Marbled Murrelets and salmon gill-net fisheries in Alaska. They focused on the Yakutat Bay area in 2010, conducting boat-based counts of murrelets and aerial surveys of gill nets in and around the bay.

At St. Lazaria Island, **Margaret Bellow, Bridgette Kirk, Cory Lebeck, Jasmine Shaw, and Leslie Slater** (USFWS, Alaska Maritime National Wildlife Refuge [AMNWR]) collected data on reproductive success, prey, and population trends of Fork-tailed (*Oceanodroma furcata*) and Leach's Storm-Petrels (*O. leucorhoa*), Pelagic Cormorants (*Phalacrocorax pelagicus*), Glaucous-winged Gulls (*Larus glaucescens*), Common (*Uria aalge*) and Thick-billed Murres (*U. lomvia*), Rhinoceros Auklets (*Cerorhinca monocerata*), and Tufted Puffins (*Fratercula cirrhata*).

**Alan Burger** of the University of Victoria (UVIC), Victoria, British Columbia (BC) and graduate student **Jenna Cragg**, in collaboration with **John Piatt** began a new project in 2010, using radar to study Kittlitz's and Marbled Murrelets in Alaska.

**Rian Dickson** of the Centre for Wildlife Ecology, Simon Fraser University, Burnaby, BC (CWE) is continuing her MSc thesis research on remigial moult in Surf and White-winged scoters (*Melanitta perspicillata* and *M. fusca*). Collaborators are **Dan Esler** (CWE, and Canadian Wildlife Service, Delta, BC) and **Jerry Hupp** (USGS, Anchorage). Rian lead the fieldwork in southeastern Alaska, while others were working on the project in the Georgia Basin-Puget Sound area.

### GUIF OF ALASKA

On East Amatuli Island in the Barren Island group, **Arthur Kettle, Sarah Youngren, Sarah Bastarache, and Abram Fleishman** (USFWS, Alaska Maritime National Wildlife Refuge [AMNWR]) monitored reproductive success, prey, and population trends of Fork-tailed Storm-petrels (*Oceanodroma furcata*), Black-legged Kittiwakes (*Rissa tridactyla*), Common (*Uria aalge*) and

Thick-billed (*U. lomvia*) Murres, and Tufted Puffins (*Fratercula cirrhata*). Through cooperative efforts with the Kenai Fjords National Park, archival photos were taken of Black-legged Kittiwake and Common Murre population plots. **Arthur Kettle** and **Leslie Slater** (AMNWR) also visited Barwell Island (near the mouth of Resurrection Bay) to install time-lapse cameras for monitoring Common Murre productivity and phenology. **Steve Ebbert** and **Michele Kuter** (AMNWR) spent about a week on Sud Island (Barren Islands) to establish vegetation-monitoring plots across the island. AMNWR plans to eradicate introduced hoary marmots (*Marmota caligata*) from Sud Island and will evaluate the response of burrow-nesting seabirds to the absence of competitors by means of the vegetation plots. The island continues to be used by Fork-tailed Storm-Petrels, and a small number of Rhinoceros Auklets were discovered in burrows along the perimeter of the island.

In the Gulf of Alaska, **Scott Hatch** (USGS) continued research and monitoring on Middleton Island, including continuation of the protocol for supplemental feeding of Black-legged Kittiwakes in the radar-tower colony. Construction continues on a Common Murre research habitat to complement the tower colony of kittiwakes and Pelagic Cormorants. **Tim van Nus** (The Netherlands) served as camp leader on Middleton and conducted a complementary study of diet in Bald Eagles, an important predator of adult seabirds on Middleton. **Jan-nik Schultner** (University of Trondheim), assisted by **Ine Dorresteijn** (The Netherlands) began a PhD project on mechanisms of life history variation in kittiwakes, and **Kyle Elliot** (PhD candidate, University of Manitoba) began comparative research on mechanisms of aging in kittiwakes and other avian species. Led by Middleton alumnus **Sarah Leclaire**, a French team, including **Nathanaël Vetter, Véronique Frochot, and Cristophe De Franceschi** continued studies of kittiwake behavioral ecology. The 2010 crew was rounded out by USGS volunteers **Erin Kennedy** (New

Zealand), **Zach Fitzner** (Colorado), and **Erin Rodgers** (Michigan). In 2010, Kittiwakes on Middleton had their most productive season in many years, correlated with an unusual abundance of capelin (*Mallotus villosus*) within foraging range, which kittiwakes exploited heavily from the time they arrived at the island in early April.

In western Cook Inlet, **Bob Day** and **Adrian Gall** (ABR, Inc.) continued bimonthly aerial surveys for Steller's Eiders (*Polysticta stelleri*) in Iliamna and Iniskin bays. This project will continue through 2011.

### PRINCE WILLIAM SOUND

In late winter and mid-summer 2010, USFWS biologists surveyed the marine bird and mammal populations of Prince William Sound (PWS). Each field crew (nine surveyors, three boats) surveyed over 1300 km of transects in late winter and 2700 km in mid-summer, completing the 12th year of surveys since the 1989 *Exxon Valdez* oil spill. **Dan Cushing** (OSU) is analyzing the 2010 data to determine population trends for taxa injured by the 1989 oil spill.

**Mayumi Arimitsu, John Piatt, Erica Madison, and Greg Snedgren** (USGS) collaborated with **David Irons, Kathy Kuletz, and Andrew Allyn** (USFWS) to complete the final year of a two-year project, funded by the National Fish and Wildlife Foundation. They studied Kittlitz's Murrelet foraging habitat in PWS during July 2010 by exploring relationships between the abundance and distribution of potential prey (forage fish and zooplankton) and water column characteristics. Walleye pollock (*Theragra chalcogramma*), Pacific herring (*Clupea pallasi*), capelin, eulachon (*Thaleichthys pacificus*) and euphausiids were well represented in trawl catches in the cold, turbid waters of Harriman and College Fjords. In contrast, catches composed of gelatinous zooplankton and age-0 walleye pollock were characteristic of warmer, clear waters in Port Wells. Kittlitz's Murrelets seemed to depart Harriman Fjord and College Fjord earlier in 2010 than in recent years. They saw

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very low numbers of these murrelets, even in historical hotspots. Preliminary results suggest historical hotspots near tidewater glaciers and moraines in Harriman and College Fjord show a greater abundance of euphausiids, capelin and herring than other areas. During the first week in August 2010, the crew deployed five satellite transmitters on Kittlitz's Murrelets captured in Blackstone Bay. All tags began reporting shortly after release. The data collected from these tags will enhance our understanding of Kittlitz's Murrelet wintering distribution and migration patterns.

**Mary Anne Bishop** (Prince William Sound Science Center [PWS Science Center]) and **Kathy Kuletz** (USFWS) continued their study on seasonal and interannual trends in seabird predation on juvenile Pacific herring during winter months in PWS, including environmental and habitat factors associated with seabird distribution. The vessel-based surveys and behavioral observations were conducted in conjunction with PWS Science Center hydroacoustic surveys. Five bays in PWS were surveyed during November 2009 and March 2010. They plan to survey 10 bays in November 2010 and March 2011. This project is part of the Herring Restoration Plan funded by the *Exxon Valdez* Oil Spill Trustee Council. **Tawna Morgan** (PWS Science Center and ABR, Inc.) conducted the 2009/2010 surveys, and Tawna and **Neil Dawson** are conducting analyses and write-up of data collected during the 2007/08 and 2008/09 winters.

In May 2010, a small USFWS crew spent several weeks resighting banded Black-legged Kittiwakes at Shoup Bay, PWS. USFWS began banding kittiwakes at this colony in 1979; up to 500 chicks have been banded annually since 1990, with the exception of several years of complete colony failure. Crews have resighted banded birds every year without exception since 1990. Currently more than 1000 banded birds that return to the colony annually.

**Bob Day** and **Steve Murphy** (ABR, Inc.) continued the 22nd year of studying bird distribution and abundance in PWS

since the *Exxon Valdez* oil spill. This study is funded by Exxon Mobil.

### ALASKA PENINSULA

**Nora Rojek** (USFWS) coordinated long-term seabird demography monitoring for AMNWR at Chowiet Island, Semidis group, off the coast of the Alaska Peninsula. **Paula Shannon** and **Frank Mayer** (USFWS) worked with several species including Northern Fulmar (*Fulmaris glacialis*), Black-legged Kittiwakes, Glaucous-winged Gulls, cormorants (*Phalacrocorax* spp.), murres, Parakeet Auklets (*Aethia psittacula*), and puffins (*Fratercula* spp.). **Nikolay Konyukhov** monitored Rhinoceros Auklets.

**Nora Rojek** and **Jeff Williams** (USFWS) conducted seabird coastline surveys in July around several of the Shumagin Islands, including Andronica, Karpa, John, Near, and Twins. Additional crew members included **Dean Kildaw**, **Ingrid Harrald**, **Nancy Langer**, **Joe Masui**, and **Emily Schmidt**. Karpa Island was previously considered to hold the largest colony of murres in the Shumagin Islands, with an estimated 220,000 present in the 1970s. In 2010, only 1290 murres were counted, which represents a large population decline.

### ALEUTIAN ISLANDS

**Jeff Williams** (USFWS) coordinated seabird monitoring in the region at several sites. **Alexis Will**, **Steven Tucker** and **Alex Wang** (USFWS) conducted the 23rd consecutive year of season-long seabird monitoring at Buldir Island, in the western Aleutians. Crews monitored 15 species of seabirds for reproductive success, populations, survival and food habits. **Janet Thibault** and **Christy Hand** (USFWS) conducted seabird monitoring at Aiktak Island in the eastern Aleutian Islands.

**Ian Jones** and staff **Erin Penney** and **Donald Pirie-Hay** (Memorial University, St. John's, Newfoundland, Canada) monitored reproductive success and survival of Least (*Aethia pusilla*) and Crested Auklets (*Aethia cristatella*) at Kiska Island. This work was supported by USFWS.

**Vernon Byrd** and **Williams** (USFWS) led the seabird survey of the Aleutian central Andreanof Island Group consisting of Kanaga, Adak, Kagalaska and Little Tanaga Islands. The team surveyed more than 500 miles by skiff in several days, and conducted censuses of all nearshore areas and seabird colonies on the islands.

**Rachel Buxton** (MUN) monitored Crested Auklets on Gareloi Island in the western Aleutians from May to September 2010 as part of a habitat restoration project. She also collected acoustic data in the eastern Aleutian Islands prior to the eradication of introduced hoary marmots and European rabbits (*Oryctolagus cuniculus*). Rachel will be starting her PhD in January with **Henrik Moller** at the University of Otago (Dunedin, New Zealand) studying seabird population recovery.

**Kyle Morrison** (Massey University, Palmerston North, New Zealand) conducted a study on sexual conflict over parental investment and molt-breeding overlap in Cassin's Auklets (*Ptychoramphus aleuticus*) on Buldir Island, AK while volunteering for USFWS, Jun-Aug 2009.

**Jeff Williams** helped continue integrated studies of the response of the Kasatochi Island ecosystem to the devastating volcanic eruption in 2008. Kasatochi was the site of a former AMNWR annual seabird monitoring site so there is a long data series from before the eruption. Williams documented the response of seabirds and marine mammals to the changes landscape. He found some species, such as Crested, Least, and Parakeet Auklets, Pigeon Guillemots (*Cephus columba*), and Horned Puffins (*Fratercula corniculata*) nesting in small numbers at localized areas, as erosion re-exposes or creates some nesting habitat. Other workers investigated changes in geomorphology, geology, botany, and soil science. The August 2010 special issue of *Arctic, Antarctic, and Alpine Research* has 10 papers documenting the response of the island system. This is one of the few studies of its kind.

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**Matt Macander** and **Bob Day** (ABR, Inc.) completed a study of seasonal variability of habitat use by Aleutian Cackling Geese (*Branta hutchinsii leucopareia*) in the western Aleutian Islands. This study was funded by the U. S. Air Force.

In August 2010, **Gregg Howald** and colleagues from Island Conservation, in coordination with the Nature Conservancy (TNC) and **Steve Delehanty** (AMNWR), reported that Rat Island was free of rats 2 years post-eradication. The official report the 10-square-mile island has successfully been freed of rats comes after two years of careful field monitoring. The invasive predator had decimated native seabird populations by preying on eggs and chicks. Rat eradication took place in September 2008, after four years of planning. Restoration of Rat Island for native seabirds is considered the most ambitious island habitat restoration project ever undertaken in the Northern Hemisphere, and the first in Alaska using anticoagulant baits. (Previous restoration projects on AMNWR islands have removed introduced foxes [*Vulpes vulpes* and *Alopex lagopus*].)

### BERING SEA

**Terry Schick, Jennifer Boisvert**, and **Bob Day** (ABR, Inc.) studied the movements of birds near a proposed wind farm site at Cape Newenham Long-range Radar Site in Bristol Bay. These data will be used to evaluate the possible impact of installing wind turbines to power the radar site. This project is funded by the U.S. Air Force.

**Tom Van Pelt** (North Pacific Research Board [NPRB]) continued work as program manager for the Bering Sea Ecosystem Project (BEST). The collaborative ecosystem-scale project has funding support from the NPRB and the National Science Foundation (NSF) and extensive in-kind support from the National Oceanic and Atmospheric Administration (NOAA) and USFWS. BEST includes seabird-focused research at several scales, and brings seabird and marine mammals research together with oceanography, fisheries, and

human dimensions to build a thoroughly integrated project. 2010 was the third and final field season of the Bering Sea Integrated Ecosystem Research Program (BSIERP) on and around the Pribilof Islands. Learn more by visiting [bsierp.nprb.org](http://bsierp.nprb.org).

The colony-based component of BSIERP was led by **Heather Renner** and **Vernon Byrd** (USFWS) and supplemented the long-term monitoring already taking place on the Pribilof Islands. The monitoring crew consisted of **Greg Thomson** and **Matt Henschen** on St. Paul Island and **Slade Saporra** and **Allyson Larned** on St. George Island. The field crew for the colony-based portion of BSIERP was **Brie Drummond, John Warzybok, Caitlin Kroeger** and **Steph Walden**.

Principal investigators **David Irons** (USFWS) and **Dan Roby** (OSU) coordinated the seabird telemetry component of BSIERP to investigate the at-sea foraging distribution and behavior of Black-legged Kittiwakes and Thick-billed Murres at the Pribilofs using GPS loggers, wet/dry activity loggers, and time-depth recorders. Two field research teams were led by **Rosana Paredes** (OSU) at St. George and **Rachael Orben** (University of California Santa Cruz [UCSC]) at St. Paul; team members included **Dan Cushing** (OSU), **Ann Harding** (Alaska Pacific University), **Dean Kildaw** (University of Alaska Fairbanks [UAF]), **Don Lyons** (OSU), **Kerrith MacKay, Vijay Patil** (UAF), and **Rolanda Steenweg** (University of Halifax). The 2010 season was very successful: teams were able to track 20 to 34 birds of each species per island. Preliminary results indicate little overlap in foraging areas between the islands and different foraging ranges between species. Geolocation data for Black-legged Kittiwakes and Thick-billed Murres were successfully collected for the second year at both Pribilof Islands; they will be part of **Orben's** PhD study on the winter distribution and ecology of Black-legged Kittiwakes (*Rissa tridactyla*) and Thick-billed Murres (*Uria lomvia*).

Principal investigators **Kathy Kuletz** (USFWS) **Andrew Trites** (University of British Columbia [UBC]) coordinated the at-sea component of the BSIERP Patch Dynamics Study (PDS) to examined predator-prey relationships around Pribilof and Bogoslof Islands. The fieldwork was completed in 2008 and 2009, and graduate students **Nathan Jones** and **Brian Hoover** (Moss Landing Marine Laboratories, California State University) are analyzing and writing results from their research on this project. The two seabird focal species of the PDS were Thick-billed Murres and Black-legged Kittiwakes. Nathan is examining diet and stable isotope signatures of these two species and Brian is examining nighttime vs. daytime foraging activity and distribution relative to environmental features.

**Kathy Kuletz** and **Liz Labunski** (USFWS) completed the third and final field season of the “Seabird Broad Scale Distribution” project as part of BSIERP. Kathy placed seabird observers on board research vessels associated with two collaborating programs, BSIERP and BEST. In 2010 observers worked from a variety of vessels on a record 17 cruise legs for a total of 413 days at sea, from February to October. Vessels included US Coast Guard icebreakers, NOAA fisheries research vessels, university research vessels, and the AMNWR vessel *Tiglax*. The majority of surveys were conducted in the Bering Sea, although a few cruises in the Gulf of Alaska were done in association with the Global Ocean Ecosystem Dynamics project, the NPRB Gulf of Alaska Integrated Ecosystem Research Program during transits to or from the Bering Sea. Two transit surveys were conducted from Dutch Harbor in the Aleutian Islands to Seattle, WA during September and October of 2010. In addition to Kathy and Liz, other 2010 observers were **Robert Ambrose, Toby Burke, Lucas DeCicco, Brian Hoover, Sara Jennings, Nathan Jones, Rob Kaler, Aaron Lang, Stephan Lorenz, Dick Prentki, Dylan Radin, Marty Reedy, Patti Sullivan, Declan Troy, and Tamara Zeller**. Data

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from the BEST-BSIERP surveys will be processed and submitted to the North Pacific Pelagic Seabird Database. Over the next two years, Kathy will be working to integrate the seabird data with environmental remote sensing data and physical and biological data from concurrent studies, along with **Labunski, Hoover, Jones, Jennings, Rob Suryan, Martin Renner, George Hunt, Jr., David Hyrenbach**, and several BSIERP investigators.

In late July 2010, **Heather Renner** (USFWS) led seabird monitoring activities aboard AMNWR's research vessel the M/V *Tiglax*. Renner visited the main Pribilof Islands, conducting a photo survey of Red-legged Kittiwake (*Rissa brevirostris*) at St. Paul, and visited nearby Walrus and Otter Islands to monitor productivity and conduct population surveys.

**Kim Nelson** (OSU) continued her research on the traditional ecological knowledge of seabirds and marine mammals at King Island in the Bering Sea, in cooperation with **Deanna Kingston** and **Jesse Ford** (OSU), and **Matt Ganley** (Bering Straits Corporation. The project entitled "Documenting the Cultural Geography, Biogeography, and Traditional Ecological Knowledge of King Island, Alaska". Using extensive interviews with elders, combined with meetings and visits to King Island and Nome/Cape Woolley, Nelson is compiling a list of birds and marine mammals that occur on and around King Island. She is creating a bird guide for use by the elders and their families, associating bird and mammal habitat with place names on King Island, and summarizing traditional uses of birds and mammals on King Island and the Seward Peninsula. This project was funded by NSF.

Two endangered Short-tailed Albatrosses (*Phoebastria albatrus*) were accidentally caught by longline vessels in the Bering Sea in 2010, on 27 August and 14 September. **Shannon Fitzgerald** of the Alaska Fisheries Science Center (AFSC), NOAA Fisheries, Seattle worked with **Ellen Lance, Greg Balogh, and Kathy Kuletz** (USFWS), **Kristin Mabry** and

**Kim Rivera** (NOAA Fisheries), **Ed Melvin** (Washington Sea Grant), and **Rob Suryan** (OSU), to address various aspects of these takes and to coordinate with the Freezer Longliner Coalition. [See also "Conservation News" elsewhere in this issue.]

### CHUKCHI SEA, BEAUFORT SEA, ALASKA NORTH SLOPE

**Dave Roseneau, Jim Schneeweis** and **Don Dragoo** (USFWS) collected data on populations of Black-legged Kittiwakes, Common and Thick-billed Murres, and on Black-legged Kittiwake productivity at Cape Lisburne.

**Adrian Gall** and **Bob Day** (ABR, Inc.) completed the third field season of boat-based seabird surveys with a crew that included **Lauren Attanas, Tawna Morgan, Jonathan Plissner, John Rose, and Peter Sanzenbacher**. These surveys are part of the Chukchi Sea Environmental Studies Program, an interdisciplinary oceanographic study to collect data concurrently on physical and biological oceanography, benthic ecology, fisheries, contaminants, marine mammals, and seabirds 60-100 nautical miles offshore from the village of Wainwright. In 2011, the investigators will synthesize these data to better understand the ecology of the northeastern Chukchi Sea. This study is funded jointly by ConocoPhillips, Shell Exploration and Production (Shell E & P), and Statoil.

**Gall and Day** coordinated the first of two field seasons of seabird and marine mammal surveys for the AK Map program, an interdisciplinary oceanographic study that focuses on the nearshore zone of the Chukchi Sea from Point Hope to Barrow. **Tim Obritschkewitsch** conducted the fieldwork in August, surveying from Point Hope to Point Lay; **Tawna Morgan** (ABR, Inc.) is working on data analysis and reporting. This study is being funded jointly by the Alaska Department of Environmental Conservation and Shell E & P.

**Gall, Day, and Morgan** completed a second year of at-sea surveys for Kittlitz's Murrelets near Barrow. This study is designed to understand movements

of the species in the area. It is funded by USFWS, with support from **Carin Ashjian** (Woods Hole Oceanographic Institute), **Robert Campbell** (University of Rhode Island), and **Steve Okkonen** (UAF). **Day, Gall, and Alex Prichard** (ABR, Inc.) synthesized all available information on the status, distribution, and ecology of Kittlitz's Murrelets in northern Alaska. This report will contribute to management of this species north of the Brooks Range and in the Chukchi and Beaufort seas. The project was funded by the USFWS.

**Kathy Kuletz** (USFWS) started the first of four years of at-sea surveys in the Alaskan Arctic, with funding from the Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE; formerly Minerals Management Service). The objective is to obtain current data on distribution and abundance of marine birds in oil lease sale regions of the Chukchi and Beaufort Seas, concurrent with vessel-based physical and biological studies. Seabird surveys were conducted on two arctic cruises in 2010. It is anticipated that seabird observers will join two to three arctic cruises per year through 2013.

**Trevor Haynes** (PhD candidate, UAF) completed his second field season studying the diet and nesting ecology of Yellow-billed Loons (*Gavia adamsii*) on the North Slope. His project focuses on the use of inland lakes by nesting Yellow-billed Loons, examining how landscape features and the distribution of important fish prey affect the distribution of nesting loons.

**Daniel Rizzolo** (USGS Alaska Science Center; Ph.D. Candidate, UAF) is happy to have successfully completed his third and final summer of fieldwork with loons on the Arctic Coastal Plain. This project deployed satellite transmitters on Red-throated (*Gavia stellata*) and Yellow-billed Loons to examine marine habitat use and non-breeding season distribution. Additionally, data on diet, body condition, reproductive success, and chick growth of nesting Red-throated and Pacific (*G. pacifica*) Loons were collected at as study site on the Chukchi Sea

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coast near Point Lay. The Native Village of Point Lay permitted access to this study site, and **Kelly Overdijin** (USGS) provided invaluable field assistance.

### OTHER PROJECTS

The EWHALE lab at UAF, headed by **Falk Huettman**, continued to mine data and work on models predicting the spatial distributions of pelagic seabirds, using public and free open-access data layers. Currently they are especially interested in global economy scenarios and forecasts, based on climate models of the Intergovernmental Panel on Climate Change and similar ones. The best global marine habitat predictions for dimethylsulfide and Storm-Petrels (*Oceanodroma* spp.) in the Bering Sea and Arctic are based on the MSc thesis of **Grant Humphries**, and employ GIS and advanced Machine Learning algorithms. Huettman's group has just completed compiling a digital atlas of the best available data on distributions of 20 Arctic circumpolar seabirds, including model predictions. They will be busy for quite awhile with improvements, data additions, data sharing, Marine Protected Area (MPA) input, and climate change and impact assessment predictions. Based on these accomplishments, they are pursuing similar seabird model-prediction work using the Global Biodiversity Information Facility, the Ocean Biogeography Information System, and similar data for Antarctic, Indian, Caribbean, central Pacific, and Atlantic oceans, working towards truly global models.

**Bob Day** (ABR, Inc.) is conducting a retrospective examination of studies examining population trends of Kittlitz's Murrelets in Alaska. This study is funded by the Alaska Department of Fish and Game.

**Tuula Hollmen** (Alaska SeaLife Center and UAF), **Shiway Wang** (Sedna Ecological, Inc.), **Sue Budge** (Dalhousie University), and **Mat Wooller** (UAF) completed a captive experiment to validate the use of compound-specific stable isotope analysis of fatty acids to study

the diets of threatened eiders (*Somateria* spp.). In collaboration with Wooller and **Margaret Petersen** and **Matt Sexson** (USGS), she collected fat samples from wild eiders on the Yukon-Kuskokwim Delta and the North Slope, which will be used to understand diets and foraging patterns of these populations. They also collected another season of yolk samples from eggs of captive eiders at the Alaska Sea Life center for an ongoing study of yolk fatty acids, with **Sara Iverson** (Dalhousie University).

**Shannon Fitzgerald** continued work on several aspects of seabird interactions with commercial groundfish fisheries in Alaskan waters. Based on recommendations from a workshop held in 2009, Shannon has started developing a different approach to producing annual estimates of seabird mortalities. He is working with **Jennifer Mondragon** (Sustainable Fisheries Division, Alaska Regional Office, NOAA) to incorporate seabirds into the Catch Accounting System. Seabird bycatch on trawl vessels has also been addressed by Fitzgerald and **Kim Dietrich**. They are using special project information from observers to analyze seabird mortality that is not accounted in the observers' standard sampling protocols. Results will also include last year's pilot work on seabird interactions with trawl paravane gear.

**Fitzgerald** is continuing his collaboration with **Kenny Down**, Executive Director of the Freezer Longline Coalition, on the use of mitigation gear by demersal longline vessels, and they are developing plans to address vessel-specific bycatch issues.

**Shiway Wang** started a PhD at UAF. Her dissertation will be entitled, "Compound-specific stable isotope analysis of fatty acids in Bering Sea organisms: variability, role as biomarkers, and transfer through the marine food web."

**Ann Harding** continued with writing stemming from her work on Doves (Alle alle) in Greenland, and will defend her PhD thesis in 2011.

## CANADA

Compiled by **Ken Morgan**

### WESTERN CANADA

**Pat Baird** is advising two graduate students at Simon Fraser University (SFU): **Toby St. Clair**, working on Dunlin (*Calidris alpina*) foraging and heavy metal exposure, and **Sarah Thomsen** studying Marbled Murrelet (*Brachyramphus marmoratus*) and Barn Owl (*Tyto alba*) interactions. Pat is at the Centre for Wildlife Ecology (CWE-SFU), Burnaby, British Columbia (BC), and the Kahiltna Research Group, California State University, Long Beach, California (CSU-Long Beach). Pat also is partnering with the University of British Columbia, Vancouver, BC (UBC) and the Vancouver Aquarium for K-12 education on plastics and their impact on seabirds for the NGO Ocean of Wings.

**Ken Morgan** of the Canadian Wildlife Service (CWS), Sidney, BC continued to monitor seabirds in the northeast Pacific; **Michael Bentley**, contractor for the Canadian Wildlife Service (CWS), Victoria, BC, conducted three vessel-based seabird surveys for Ken along the 1,500 km-long "Line P" transect to Ocean Station Papa (50°N, 145°W). Ken's project also includes the western Canadian Arctic (see details under "Arctic Canada, below").

**Carita Bergman** (Gwaii Haanas National Park Reserve, Skidegate, BC) led the planning for rat eradication on five historic seabird nesting islands in southern Haida Gwaii (formerly the Queen Charlotte Islands), targeting specifically the recovery of breeding Ancient Murrelets (*Synthliboramphus antiquus*) and two species of Storm-Petrels (*Oceanodroma* spp.). They did pre-eradication acoustic monitoring so as to monitor seabird recovery after restoration activities, in addition to a suite of other ecosystem measures.

In the summer of 2010, **Doug Bertram** of the Science and Technology Branch, Environment Canada (S&T-EC), Sidney, BC worked with **Bernard Schroeder** (Bernard K. Schroeder Consulting, Nanaimo, BC) to survey Marbled

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Murrelets at long-term radar monitoring stations in the British Columbia Conservation Regions of Haida Gwaii and the Southern Mainland Coast. Doug also secured a short-term grant to investigate Western Grebe (*Aechmophorus occidentalis*) population declines in Canada with **Peter Arcese** (UBC) and **Sean Boyd** (S&T, EC).

**Louise Blight** continued working toward a PhD with **Peter Arcese** of the Centre for Applied Conservation Research (CACR), UBC. In June, Louise conducted population surveys of most of the Glaucous-winged Gull (*Larus glaucescens*) colonies in the Georgia Basin (south-western inshore waters of BC), finishing those she commenced in June 2009. These colonies last underwent a complete census 25 years ago, when they were surveyed by **Kees Vermeer** (retired CWS scientist, Sidney, BC). Populations have declined considerably over that period. Louise was ably assisted in both 2009 and 2010 by **Tella Osler** of the University of Victoria (UVIC), Victoria, BC, and in 2010 by **Trudy Chatwin** of the BC Ministry of Environment (BCMOE), Nanaimo, BC, and **Mikaela Davis** (CWE, SFU). Louise also continued her work with the Local Organising Committee for the First World Seabird Conference, along with a dozen colleagues [see "Meeting News," this issue].

In early July 2010, **Sean Boyd** (S&T-EC) and **Mark Hipfner** (CWE-SFU and S&T-EC), and **Glen Keddie** (CWS contractor, Lasqueti Island, BC) attached 6-g solar-powered transmitters to six adult Rhinoceros Auklets (*Cerorhinca monocerata*) breeding at Pine Island, BC. The tags were Platform Terminal Transmitters (PTTs) from Microwave Telemetry, Inc.; they were back-mounted between the scapulars and held in place with subcutaneous prongs. Of the six PTTs, two signaled for two to three weeks, and three signaled for up to six weeks. The latter three auklets traveled large distances and in very different directions: one bird moved north to approximately 58°N, about 150-200 km off the west coast of Alaska; one moved

to an area roughly 200 km northwest of Haida Gwaii; and the third bird moved south to shallow waters off the coast of Oregon at about 45°N. All three birds were still moving when the PTTs stopped transmitting. Sean is uncertain of the cause of the premature end to the tracking, but the prong attachment protocol is suspected. Sean stated that although the technology shows promise for tracking small auklets over large distances, additional experimentation with different attachment protocols is needed.

**Alan Burger** (UVIC) is continuing research on Marbled Murrelets and other seabirds in British Columbia. Burger is completing a status review of the Marbled Murrelet in Canada for the Committee on the Status of Endangered Wildlife. He continues to work with **Louise Waterhouse** (BC Ministry of Forests, Nanaimo, BC), **Alvin Cober** (BCMOE, Queen Charlotte City, Haida Gwaii, BC), and **David (Dov) Lank** (SFU) to identify and map murrelet nesting habitat in BC, by analyzing data from past radar and low-level helicopter surveys.

**Harry Carter** (Carter Biological Consulting, Victoria, BC) and **Trudy Chatwin** (BCMOE, Nanaimo, BC) conducted 2010 surveys for Pelagic and Double-crested Cormorants (*Phalacrocorax pelagicus* and *P. auritus*) at the largest remaining breeding colonies in the Strait of Georgia: on Mandarte and Mitlenatch Islands, and on two Vancouver bridges, the Second Narrows Bridge and the Burrard Street Bridge. Both species have declined greatly in the strait over the past two decades due to impacts from eagles and other factors, but relatively large colonies (hundreds of pairs) remain at these four locations.

**Tony Gaston** of S&T-EC, Ottawa, Ontario (ON) wrote of the work he and his team conducted in Haida Gwaii, BC in 2010. Tony, **Akiko Shoji** (University of Ottawa, Ottawa, ON), **Myra Burrell** and **Jake Pattison** (contractors, EC) and **Erin Harris** (volunteer) studied incubation behavior in Ancient Murrelets (*Synthliboramphus antiquus*) at Reef Island in April and May. They observed birds occupying artificial nest boxes that

had been put in place in 1997. Of 76 boxes, 51% were occupied in 2010. The team also monitored breeding chronology and success. To examine metabolic rates during incubation, the team measured rates of oxygen consumption and carbon dioxide production in the nest boxes. Conditions for Ancient Murrelet reproduction at Reef Island in 2010 seem to have been poor, with incubation shifts longer than those observed in previous years, which they assumed was a sign of poor feeding conditions. Tony and Akiko also studied nest attendance pattern and feeding rates in Pigeon Guillemots (*Cephus columba*) at East Limestone Island (ELI) in June and July, using birds in artificial nest boxes that had been put in place in 2000. Eight of 10 boxes were occupied in 2010. The team also attached time-depth-temperature recorders to Pigeon Guillemots to study the foraging behavior (only one recapture), and they collected adult blood for sexing. Tony also reported that the Laskeek Bay Conservation Society field project, led by Pattison and **Ainsley Brown** (Queen Charlotte City, BC), continued monitoring seabirds in Laskeek Bay off the east coast of Haida Gwaii.

Tony stated that the population of Ancient Murrelets on ELI continues to decline. This year, after three years without activity, chicks were trapped during their departure along the north side of the island. Despite the absence of researcher disturbance in that area for three years, declines there were greater than have been recorded at sites that were actively studied every year. This suggested that the declines were not a consequence of the research and monitoring activities. Introduced raccoons (*Procyon lotor*) appeared to be the most likely culprit. Tony also noted that Cassin's Auklets (*Ptychoramphus aleuticus*) and Fork-tailed Storm-Petrels (*Oceanodroma furcata*) are increasing in the above areas; and that Black Oystercatcher (*Haematopus bachmani*) and Glaucous-winged Gull populations appear to be stable in Laskeek Bay and Juan Perez Sound on Haida Gwaii.

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**Anne Harfenist** (Harfenist Environmental Consulting, Smithers, BC), along with assistant **Janet Gray** (Haida Gwaii, BC), completed the fifth and final year of her Leach's Storm-Petrel (*Oceanodroma leuconotha*) survival study. Adult survival estimates will be generated for two colonies along the British Columbian coast: Rock Islet in southeast Haida Gwaii, and Cleland Island off southwestern Vancouver Island. This project has been funded through the Bulkley Valley Centre for Natural Resources Research and Management.

**Mark Hipfner** (CWE-SFU and S&T-EC) reported that the summer of 2010 marked the 17th year of operation of the CWE's seabird research and monitoring program on Triangle Island, BC. The 2010 field crew consisted of **Glenn Crossin** (SFU Post-doc); **Amy-Lee Kouwenberg**, PhD student, Memorial University of Newfoundland (MUN), St. John's, Newfoundland and Labrador (NL), and CWS contractors **Kristin Charleton**, **Shannon McFadyen**, **Jason van Rooyen**, and **Marjorie Sorenson** (in addition to Hipfner). They monitored breeding chronology and success, and related demographic parameters, in Cassin's and Rhinoceros Auklets, Black Oystercatchers, and Glaucous-winged Gulls. Breeding was very late, and success was very low for all pelagic species in 2010. Hipfner also noted that the CWS continued with their seabird monitoring program in BC. **Moira Lemon** and **Dan Shervill** (both CWS, Delta, BC) led a contractor field crew consisting of Crossin, **Glen Keddie** and **Rachel Darvill** in a resurvey of the Cassin's Auklet and Ancient Murrelet colonies on Rankine Island in Haida Gwaii. They also deployed data loggers on female Cassin's Auklets, as was done concurrently on Triangle Island. Hipfner, Keddie, Shervill and **Sean Boyd** (S&T-EC, Delta, BC) visited the Rhinoceros Auklet colonies at Lucy Island (North Coast), Pine Island (Central Coast), and SGang Gwaay (Haida Gwaii) in July to band adult birds, as part of an ongoing demographic studies investigating the population-level impacts of fisheries bycatch.

In collaboration with the EWHALE lab at the University of Alaska Fairbanks (UAF), student intern **M. Schmid** (Universities of Goettingen/Lincoln) is starting a new a project to predict the thickness and percent cover of moss on Haida Gwaii remotely, by use of modeling. Moss cover can probably be used as a habitat indicator for nesting Marbled Murrelets, moss diversity, and climate change (e.g. drying).

### CENTRAL AND EASTERN CANADA

**Morgan Gilmour**, an MS student at Bucknell University, Lewisburg, Pennsylvania completed her second and final field season studying Leach's Storm-Petrels (*Oceanodroma leuconotha*) at Bowdoin Scientific Station on Kent Island in New Brunswick, Canada. Under the supervision of **Don Dearborn** (Bates College) and **Mark Haussmann** (Bucknell University), Morgan is studying the links between wintering ecology, subsequent reproductive effort, and individual quality in the petrels. Measures of wintering ecology include analysis of stable isotope signatures and corticosterone in winter-grown feathers; measures of reproductive ecology include summer stable isotope signatures and chick growth rates; and measures of individual quality include analysis of telomere length and stress responses. Other collaborators on the project include **Christine Lattin** and **Michael Romero** (Tufts University), and **Bob Mauck** (Kenyon College).

**Kirsten Bowser**, MSc student with **Tony Diamond**, University of New Brunswick (UNB), Fredericton, New Brunswick (NB) took parental leave from her project probing the food web of seabirds on Machias Seal Island (MSI) in the Bay of Fundy. She had been using a variety of techniques including DNA bar-coding and stable-isotope ratios.

**Chantelle Burke**, PhD student with **Bill Montevecchi**, MUN, St. John's, NL began a project deploying PTTs on adult Common Murres (*Uria aalge*) on Funk Island, NL to investigate fall migration patterns, molting, and nursery areas.

**Gail Davoren** (University of Manitoba, Winnipeg, Manitoba) and **Joseph**

**Allen** (PhD student) conducted fine- and meso-scale hydroacoustic and seabird surveys within foraging ranges of seabirds breeding at Funk Island Ecological Reserve on the northeast coast of NL. Joe is studying how the aggregative and functional responses of seabird predators change under varying prey densities and prey behavior.

**Tony Diamond** (UNB,) continued monitoring and long-term research on seabirds on MSI in 2010. Arctic and Common terns (*Sterna paradisaea* and *S. hirundo*) nested again in small numbers (although more than in 2009), but they abandoned late in June. For the first year since 2005, Arctic Terns had non-zero hatch success—2 or 3 chicks hatched, but they survived a day or less. Atlantic Puffins (*Fratercula arctica*) had the 3rd lowest growth rates in 15 years, and Razorbills (*Alca torda*) had the lowest ever. Fledgling success was average in Puffins but the third lowest recorded for Razorbills. Diet was predominantly (by number) euphausiids in Puffins and butterfish (*Peprilus triacanthus*) in Razorbills. Atlantic saury (*Scomberesox saurus*) was recorded in Puffin diet for the first time. Gull predation on eggs and young of both species continues to increase.

**Dave Fifield** (MSc student with **Bill Montevecchi**, MUN) continued tracking the migration and wintering areas of Northern Gannets (*Morus bassanus*) from North American colonies, in collaboration with **Stefan Garthe** (University of Kiel, Kiel, Germany).

**Michelle Fitzsimmons** (MSc student with **Anne Storey**, MUN) began collecting physiological and behavioral data for her thesis on mate assessment in Atlantic Puffins on Gull Island, NL.

**Carina Gjerdrum** of CWS, Dartmouth, Nova Scotia (NS) continued to coordinate the collection of pelagic seabird data offshore of Atlantic Canada. They now have five years of data (2006–2010) and are beginning to compare current patterns of distribution and abundance with historic records. Gull and tern colonies in the four Atlantic Provinces are surveyed every 4–5 years

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in rotation; in 2010, aerial and ground counts were conducted along the Gulf coast of NB.

**April Hedd** (with **Bill Monteverchi**, MUN) completed the seventh season of a long-term study of Leach's Storm-Petrel population and foraging ecology at Gull Island, NL. She retrieved Global Light Sensing (GLS) loggers from Common Murres on Gull and Funk Islands, NL, with the goal of describing year-round movement patterns. April also worked with GLS loggers on the Falkland islands, south Atlantic (see Regional Report for Oceania and Southern Ocean).

**Robin Hunnewell** (PhD student with **Tony Diamond**, UNB, Fredericton, NB) completed her 3rd and last season of fieldwork on phalaropes (*Phalaropus spp.*) migrating through the Bay of Fundy (NB) in the fall. She collaborated with **John Chardine**, S&T-EC, Sackville, NB.

**Kevin Kelly** started working with **Tony Diamond** (UNB) on an MSc thesis on condition in Atlantic Puffins, in collaboration with **Becky Holberton** (University of Maine, Orono, Maine). Kevin found that the blood profiles of Puffins caught in box-traps suggested that they were in poorer condition than known breeders in burrows. In collaboration with Maine Coastal Islands National Wildlife Refuge, Tony and Kevin deployed Global Positioning System (GPS) tags on five puffins, which promptly abandoned their chicks. Only one tag was recovered.

**Amy-Lee Kouwenberg**, PhD candidate with **Anne Storey** (MUN), along with **Mark Hipfner**, continued her study of carry-over effects from the nonbreeding season on breeding parameters of Atlantic Puffins on Gull Island (NL) and Rhinoceros Auklets on Triangle Island (BC). An attempt to gather data on the Gannet Islands (NL) was aborted due to the presence of a Polar Bear (*Ursus maritimus*).

**Bill Monteverchi** (MUN) and team continued long-term research on the seabird colonies at Funk, Baccalieu, Gull and Gannet Islands and at Cape St. Mary's (NL). Highlights of this work

included retrieving five GLS devices from breeding Northern Gannets (*Morus bassanus*) at Baccalieu Island, the first of which indicated that the gannet wintered in the Gulf of Mexico near the Deepwater Horizon oil platform, although it departed the Gulf before the platform explosion and blowout in late April. To further describe migration and marine use areas of gannets, 36 GLS were deployed on breeding gannets on Baccalieu Island (n=13) and on Funk Island (n=23); and 26 PTTs were attached to recently fledged juvenile gannets at Cape St. Mary's (n=23) and Funk Island (n=3).

**Megan Rector** (MSc student with **Anne Storey** and **Carolyn Walsh**, MUN) deployed cameras and microphones in burrows to gather more data for her study of chick-begging and parental care by Atlantic Puffins on Gull Island, NL.

**Paul Regular** (PhD student with **Bill Monteverchi**, MUN) continued his study of diving (using time-depth recording devices) and foraging behavior (GPS loggers) of Common Murres (*Uria aalge*) at Gull and Funk Islands (NL).

Since October 2009, **Samantha Richman** has been working as a post-doc with **Magella Guillemette** at the Université du Québec à Rimouski (UQAR), continuing her work on the foraging energetics of captive sea ducks at the Maurice Lamontagne Institute (Fisheries and Oceans Canada [DFO], Mont-Joli, Quebec). Her collaborator is **Sveinn Are Hanssen** (Norwegian Institute for Nature Research, Tromsø, Norway) and funding is by the Norwegian Research Council. Their study will examine sea duck predation on mussel aquaculture. In addition, Richman and **Elisabeth Varennes** (PhD student, UQAR) will be investigating prey size selection and intake rates of captive Common Eiders (*Somateria mollissima*) and White-winged Scoters (*Melanitta fusca*) feeding on live blue mussels (*Mytilus edulis*) naturally attached to stone tiles. The captive sea ducks allow measurement of foraging behavior and prey consumption rates as a function of size and availability. This project will provide vital information for

models of energy balance and conservation of habitat.

**Morag Ryan** (honors student with **Anne Storey**, MUN) gathered behavioral data and blood samples for her study of physiological trade-offs between Common Murre mates on Gull Island, NL. **Linda Takahashi** (MSc student with **Anne Storey** and **Carolyn Walsh**, MUN) continued her video analysis of Common Murre parental care behavior and negotiation during chick rearing on Gull Island.

**Laura McFarlane Tranquilla** (PhD student with **Bill Monteverchi**) continued work using year-round tracking devices on Thick-billed (*Uria lomvia*) and Common Murres to describe wintering areas and habitat associations of these species. The study area included Prince Leopold, Digges, and Coats Islands and the Minarets, Nunavut (NU); and from Gannet, Funk and Gull Islands (NL). She collaborated with **Tony Gaston** (S&T-EC, Ottawa, Ontario [ON]).

**Emily Wilson** (MSc student, MUN, and Canadian Healthy Oceans Network) spent the summer and fall completing several ship-based seabird surveys as part of her research on their marine communities and foraging areas.

### ARCTIC CANADA

**Tony Gaston** (S&T-EC, Ottawa, ON) reported that in July and August, EC teams, including **Grant Gilchrist** (S&T-EC, Ottawa), maintained working facilities in the north. They built new working cabins at Digges and Prince Leopold islands and at East Bay, Southampton Island, and replaced observation blinds at Coats Island (all in NU). They were supported by Government of Canada's Arctic Research Infrastructure Fund. The renewal of blinds on Coats will provide better observing conditions as well as improved concealment from the birds, thereby reducing disturbance. That team also included **Jennifer Provencher** (MSc student, UVIC, Victoria, BC), **Joseph Nakoolak** (Coral Harbour, NU), **Paul Smith** (EC contractor, Ottawa), **Gabriella Ibarguchi** (EC contractor, Queen's University, Kingston, ON), and

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**Edith Grosbellet** [student, University of Strasburg, France).

At Prince Leopold Island, Tony monitored populations and reproduction of Thick-billed Murres, Northern Fulmars (*Fulmarus glacialis*) and Black-legged Kittiwakes (*Rissa tridactyla*), with the help of **Valerie Amarualik** (student, Resolute, NU). Grant completed photo censuses of Digges Sound (NU) and retrieved geolocator tags from Thick-billed Murres on Digges Island.

**Jennifer Provencher** and her team carried out a variety of studies on Thick-billed Murres at Coats. They deployed GPS tags and 3-D accelerometers (Little Leonardo, Tokyo, Japan), which were provided by **Yan Ropert-Coudert** (Centre National de Recherches Scientifiques, Strasburg, France). The accelerometer portion of the project was for **Maryline Levaillant** (graduate student, University of Strasburg, France) and continued the previous year's work. All the usual monitoring was carried out on murres and Glaucous Gulls (*Larus hyperboreus*). 2010 was a record early year for ice conditions in Hudson Bay, and the murres laid very early, at a similar date to that in the year when ice conditions were previously the earliest. The number of breeding pairs of Glaucous Gulls in the colony was the highest ever, as was the production of young gulls. The Coats crew also observed Razorbills (*Alca torda*) on several occasions. This species is uncommon species on Coats, although not unheard-of there, but Coats is well north of their usual breeding areas in Canada. The birds were observed in the same location as previously, and a maximum of nine individuals were recorded this year; however, they were not seen to be breeding.

MSc student **Kelly Boadway**, with **Tony Diamond**, UNB, completed field work on Arctic Tern (*Sterna paradisaea*) breeding biology in the high arctic, in collaboration with **Mark Mallory** (CWS, NU).

**Carina Gjerdum** (CWS, Dartmouth, NS) continued to coordinate pelagic seabird surveys this past summer from Dartmouth to Kugluktuk (NU), si-

multaneously with surveys from Victoria (BC) to Kugluktuk. She was collaborating with **Ken Morgan** (CWS, Sidney, BC), as part of Canada's Three Oceans Program (DFO) (see also "Western Canada," above).

### OTHER WORK

**Patrick O'Hara** (CWS, Sidney, BC, and UVIC, Victoria, BC) reported that **Jennifer Provencher**, his graduate student at UVIC, successfully defended her MSc thesis. Jennifer quantified dietary shifts over two decades in arctic breeding seabirds, associated with climate change. She also found that plastics were surprisingly prevalent in Thick-billed Murres; this is noteworthy given that this species is not a surface forager.

**Norma Serra-Sogas** (UVIC, Victoria, BC), with mentor **Patrick O'Hara**, successfully defended her MSc in Geography. Norma developed risk models based on aerial surveillance data on maritime discharges of oily wastes, and estimated impacts on important bird areas and protected areas in BC waters.

**Ken Morgan** continued to oversee pelagic monitoring of seabirds (see "Western Canada" and "Arctic Canada," above). Ken noted that much of 2010 was taken up with co-chairing the Travel Awards Committee (TAC) for the First World Seabird Conference [see "Meetings News," this issue]. He also continued working on a variety of seabird files, including oil spill planning, seabird bycatch assessment, marine protected area planning, Important Bird Area identification, and environmental assessments. Additionally, Ken continued as the chair of Canada's Short-tailed Albatross (*Phoebastria albatrus*) / Pink-footed Shearwater (*Puffinus creatopus*) Recovery Team, along with **Louise Blight** (Vancouver, BC), **Myke Chutter** (Victoria, BC), **Peter Hodum** (Seattle, Washington), **Nadine Parker** (Vancouver, BC), **Joanna Smith** (Seattle, WA) and **Ross Vennesland** (Vancouver, BC). Ken also continued to participate in several international initiatives, which included serving on the USA-Japan Short-tailed Albatross Recovery Team;

as Canadian national point of contact for the Agreement on the Conservation of Albatrosses and Petrels; and on Pink-footed Shearwater conservation and recovery issues, together with Peter Hodum, **Cynthia Pekarik** (CWS, Gatineau, Québec) and Chilean government staff and non-governmental agencies.

**Patrick O'Hara** (CWS, Sidney, BC, and UVIC, Victoria, BC) reports that the majority of the past year was spent chairing the Local Organizing Committee for the 1st World Seabird Conference. As well, Pat continued developing techniques and approaches to modeling potential impact on marine ecosystems from various human activities including shipping, fishing and pollution.

**Louise Blight** (Centre for Applied Conservation Research, University of British Columbia, Vancouver, BC) continued working with the Friends of the Ross Sea Ecosystem on conservation in the Antarctic (see regional report on Oceania and Southern Ocean).

## OREGON AND WASHINGTON

Compiled by **Don Lyons**

### COASTAL COLONIES

**Rob Suryan** of Oregon State University (OSU), **Amanda Gladics** (Marine Resource Management, OSU), **Adrian Lohr** (OSU), **Cheryl Horton** of the U.S. Fish and Wildlife Service (USFWS), and intern **Leah Segui** (NSF) conducted studies of Common Murres (*Uria aalge*) at the Yaquina Head colony in Newport, Oregon (OR). This is the fourth consecutive year of collaborative studies among OSU, USFWS, and Bureau of Land Management at this site. Reproductive success of murres (fledglings per egg laid) was slightly reduced in 2010 (68%) compared to 2008 (77%) and 2009 (77%), although 2007 was much lower (54%). The most striking difference in diets among the past four years was the dominance of sand lance (*Ammodytes hexapterus*) in 2008 and the dominance of smelt (Osmeridae)

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in 2010. Rockfish (*Sebastodes* spp.) were most abundant in diets in 2008 and 2010. Bald Eagles (*Haliaeetus leucocephalus*) cause significant disturbance to murre colonies in Oregon and were the dominant disturbance source at Yaquina Head in all years. Disturbance by eagles tends to decline in mid-June, during late incubation for murres, thus lessening the impact on murre reproductive output. This year eagle disturbance occurred in more sections of the colony than previous years, but even so, only small sections of Colony and Flatop Rocks experienced complete reproductive failure. However, disturbance during early season does appear to affect lay dates, and no chicks were reared on the headland itself, which likely was due again to predator disturbance (avian or mammalian). Eagles most frequently killed adult murres, and most eggs were removed by secondary predators (e.g., Western Gulls, *Larus occidentalis*). Unlike in 2009, Common Ravens (*Corvus corax*) were a minor disturbance source. During 223 hr of observation, we witnessed 20 disturbance events where 239 eggs and 10 chicks were taken. The most surprising predator was a juvenile California Brown Pelican (*Pelecanus occidentalis californicus*), which landed on the colony and ate 10 murre chicks.

We succeeded in tagging eight murres with VHF radio transmitters. Weather and scheduling only permitted one nighttime capture, in which we were assisted by **Roy Lowe**, **Shawn Stephensen**, and **Kristopher Robison** (USFWS). Two birds were captured soon after dark near the rocks beyond the headland; these two individuals were detected and monitored back on colony during the following weeks. It is likely that the other birds, which were captured farther from the colony, were non-breeders or failed breeders.

A population assessment of Tufted Puffin (*Fratercula cirrhata*) on Haystack Rock, Cannon Beach, OR was conducted by Shawn Stephensen, Kristopher Robison, and **Richard Messenger** of the Oregon Coast National Wildlife Refuge Complex (OCNWR) and **Deborah**

**Jacques** (Pacific Eco Logic). The island is within the Oregon Islands National Wildlife Refuge. An estimate of the breeding population was obtained from the number of active burrows in early spring, when puffins were most visible. Data have not been fully analyzed, but their initial estimate of the breeding population was approximately 85-120 birds. At the close of observations in early September, the team estimated 30-40 burrows had fledged chicks at least 5 burrows were active. There may be an error of 15-20% in using occupied burrows to derive population estimates, due to issues with mapping and potential multiple burrow entries. The team documented many negative interactions with gulls and disturbances by eagles, as well as interesting social behavior between puffins. The project also included a pilot study to evaluate the feasibility of monitoring reproductive parameters at the island, such as breeding phenology, from shore-based vantage points.

**Shawn Stephensen** and **David Ledig** (OCNWR) conducted an aerial seabird colony survey of the entire Oregon coast on 7, 8, and 26 June 2010. The aircraft used on June 7-8 was a Bell Jet Ranger III helicopter; total flight time was approximately 10 hours. The 26 June survey was in a fixed-wing Cessna 185 piloted by commercial pilot/owner **Jack Christopherson** (Wilderness Air Charters, Inc.). All cliff-nesting colonies were digitally photographed, and birds were counted utilizing GIS computer software. Thousands of digital images were organized and archived for future reference. Colony attendance by Common Murres was slightly depressed in comparison to previous years; on the other hand, murres returned to nest at several historical colony sites that had not been attended during the last ten years.

**Lee Robinson** finished his 17th season of monitoring a small colony (40 nest boxes) of Pigeon Guillemots (*Cephus columba*) on Protection Island National Wildlife Refuge. Fledging success dropped in 2010 to 47%, after three years of increasing success that reached a high of 66% last season. Many of the

same banded birds are returning each year to the same nest boxes Lee has put out, including one bird who has returned to the same box for the past 14 seasons. He continues to record weight and wing chord for all adults captured, and growth rate and length of time in the nest box before fledging for each chick.

**Scott Pearson** of the Washington Department of Fish and Wildlife (WDFW), **Tom Good** (NOAA Fisheries), and **Peter Hodum** extended their multi-year comparative study of the foraging ecology and reproductive success of Rhinoceros Auklets (*Cerorhinca monocerata*) on Protection and Destruction islands, WA. This was the 5th and 3rd year, respectively, of their work on the islands. The auklet study addresses spatial and temporal variation in diet across three different marine habitats. As in previous years, prey species composition differed between sites, with birds on Protection exploiting a narrower range of prey species and depending more heavily on a primary species, Pacific sand lance, than auklets on Destruction. Colony productivity and reproductive success, as measured by burrow occupancy and hatching and fledging success, remained consistently high at both colonies in 2010. There has been little variation in reproductive success parameters at any of the study colonies since the inception of the study, despite pronounced dietary variation in colonies of the outer coast.

### TERNS, CORMORANTS, AND SAIMON ON THE COLUMBIA RIVER

A multi-year study of seabird predation on salmon smolts (*Oncorhynchus* spp.) in the lower Columbia River continued in 2010, under OSU, U.S. Geological Survey (USGS)-Oregon Cooperative Fish and Wildlife Research Unit, Real Time Research, and their cooperators. The study includes the largest known breeding colonies of Caspian Terns (*Hydroprogne caspia*) and Double-crested Cormorants (*Phalacrocorax auritus*) on the west coast, both on East Sand Island in the Columbia River estuary. Additionally, they worked on colonies of Caspian several gull species on the middle

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Columbia River, the Columbia Plateau, and elsewhere in the Pacific Northwest.

In 2010, the size of the Caspian Tern colony on East Sand Island was approximately 8,280 pairs, down from approximately 9,850 pairs in 2009. Approximately 0.06 fledglings per breeding pair were produced in 2010, which was by far the lowest productivity ever recorded at this colony. Juvenile salmonids comprised about 33% of the diet of terns at the East Sand Island colony in 2010, down from 37% in 2009. Northern anchovy (*Engraulis mordax*) and surfperch (*Embiotocidae*) again were the most prevalent prey in the non-salmonid portion of tern diets. The size of the Double-crested Cormorant colony on East Sand Island in 2010 was approximately 13,600 nesting pairs (compared to approximately 12,090 pairs in 2009). While colony size fluctuated by about 10 to 20% during 2007 to 2010, overall this colony has increased dramatically since it was first noted 20 years ago. East Sand Island continues to be the largest known post-breeding roost site for California Brown Pelicans. Over 11,470 Brown Pelicans were counted on the island in mid-August.

The size of the Caspian Tern colony on Crescent Island, on the mid-Columbia River near its confluence with the Snake River in eastern WA, was similar in 2010 and 2009 (ca. 350 nesting pairs). As in previous years, juvenile salmonids comprised about 2/3 of the diet of Crescent Island terns. There was again a sizable Caspian Tern colony on Goose Island in the Potholes Reservoir in the Columbia Plateau Region. Approximately 360 breeding pairs nested at this colony in 2010, although this fewer than almost 500 pairs in 2009.

The largest Double-crested Cormorant breeding colony on the mid-Columbia River is on Foundation Island, 19 km up the river from Crescent Island. This tree-nesting colony consisted of at least 310 nesting pairs in 2010, similar to 2009. The largest Double-crested Cormorant colony in the Columbia Plateau Region, however, is on Potholes Reservoir, where around 830 pairs nested in

trees at the north end of the reservoir in 2010, similar to 2009.

The second largest Caspian Tern colony in the Pacific Northwest has been at Dungeness Spit, WA in recent years. A maximum of 33 attended nests were counted at the Dungeness Spit site in late May 2010. However, the colony failed a few days later. After this event, observers walked through the colony and counted nearly 260 nest scrapes. As in 2009, the wholesale failure was due to avian and mammalian predation pressure.

A breeding colony that formed at the Port of Bellingham, WA in 2009 grew considerably in 2010. A minimum of 1300 breeding pairs were estimated in 2010, up from fewer than 100 pairs in 2009.

Implementation of the Caspian Tern Management Plan continued in 2010. A nesting island of 0.8 acre was created in Sheepy Lake, in the Lower Klamath National Wildlife Refuge, by the U.S. Army Corps of Engineers. Previous projects included two 0.5-acre tern nesting islands were built at Summer Lake Wildlife Area in southeastern Oregon, built before the 2009 nesting season, and two 1-acre nesting islands at Crump Lake in southeastern Oregon and at Fern Ridge Reservoir near Eugene, Oregon, built before the 2008 season. Caspian Tern decoys and tern calls from sound systems were deployed at Sheepy Lake, Summer Lake, and Fern Ridge; all sites were monitored for tern activity throughout the breeding season. Approximately 260 pairs of Caspian Terns were attracted to nest on the new island in Sheepy Lake. Productivity at this new island was 0.65 fledglings per breeding pair, perhaps the highest in the region in 2010. There were 29 nesting attempts at the Summer Lake islands in 2010. At the island in Crump Lake there were 71 nesting attempts in 2010; however, the colony ultimately failed. This compares to 690 pairs and 430 pairs in 2009 and 2008, respectively. The colony at Crump Lake nested successfully in both previous years. Tui chub (*Gila bicolor*) and catfish (*Ictaluridae*) made up the bulk of tern diets. As in 2008 and 2009, no Caspian

Terns were attracted to nest at the new island in Fern Ridge Reservoir. However, based on our review of video recordings, multiple different Caspian Terns visited the island on several occasions.

Participants in the tern-cormorant study included OSU, Real Time Research, U.S. Geological Survey (USGS), and the interagency Caspian Tern Working Group (CTWG), including NOAA-Fisheries, U.S. Army Corps of Engineers, USFWS, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife (WDFW), Idaho Department of Fish and Game, Columbia River Inter-Tribal Fish Commission, and others. This year's research team included **Dan Roby** (USGS/OSU), **Jessica Adkins**, **Dan Battaglia**, **Stefanie Collar**, **Karen Courtot**, **Lucie Faulquier**, **Dan Harvey**, **Pete Loschl**, **Don Lyons**, **Tim Marcella**, **Allison Patterson**, **Adam Peck-Richardson**, **Yasuko Suzuki**, **James Tennyson**, and **Emily Tompkins** (OSU), **Ken Collis**, **Brad Cramer**, **Allen Evans**, **Mike Hawbecker**, and **Nathan Hostetter** (RTR), and numerous seasonal technicians and volunteers. This study was funded by the Bonneville Power Administration, the Northwest Power and Conservation Council, and the U.S. Army Corps of Engineers.

### OTHER SEABIRD FIELD WORK

**Martin Raphael** and **Tom Bloxton** of the U.S. Forest Service, Pacific Northwest Research Station, Olympia, WA, continued collaborative studies on Marbled Murrelets and other seabirds in Puget Sound, Strait of Juan de Fuca, and Hood Canal during 2010. They completed the 11th year of long-term population monitoring of murrelets at sea under the Northwest Forest Plan (NWFP), along with researchers elsewhere in WA, OR, and northern CA. The NWFP is a large-scale ecosystem management plan for federal lands in the Pacific Northwest of the U.S. Raphael and Bloxton surveyed murrelets and other seabirds and marine mammals in Recovery Zone 1, which includes Puget Sound (San Juan Islands to Olympia) and the Strait of Juan de Fuca. They also collected baseline data

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on within-season and annual changes in murrelet distribution, densities, and productivity (an index estimated from ratios of juvenile to adult birds) in the San Juan Island archipelago; this data set goes back to 1995. They are analyzing population trends in other species surveyed, such as Ancient Murrelet (*Synthliboramphus antiquus*), Cassin's Auklet (*Ptychoramphus aleuticus*), Common Murre, Pigeon Guillemot, Rhinoceros Auklet, and Tufted Puffin, for all of WA, in collaboration with **Scott Pearson** (WDFW).

Using modified horizontal and vertical radar systems, staff at Hamer Environmental L.P., including **Josh Stumpf**, **Nathalie Denis**, **Tom Hamer** and **Glenn Johnson**, continue to study the flight behavior and height distribution of the Marbled Murrelet along the coast of WA. Demand for wind energy facilities is increasing in this area. Most of these facilities, if they are built, will be near coastal environments in the breeding range of the Marbled Murrelet. Data are being collected inland flight behavior as birds transit to and from their nest sites, including height, presence of flight corridors, and passage rates. One of the objectives is to determine how height profiles of the birds' flight—and relative risk of collision with structures, such as wind generators—may change with topography, distance from coast, landscape level, habitat conditions, and weather. This information should help predict the risk of collision of these birds with different structures, including wind energy developments that pose a risk of collisions for the federally listed murrelets.

**Kim Nelson** (OSU) began a cooperative project with the BLM, U.S. Forest Service, USFWS, Oregon Department of Fish and Wildlife, and Oregon Department of Forestry to develop a geo-spatial database for Marbled Murrelets in Oregon, based on existing data from forest surveys, nest sites, and locations where eggshells and grounded birds have been found.

### COASTAL MIGRANTS

**Deborah Jacques** continued work with the Wildlife Center of the North

Coast (WCNC; **Sharnelle Fee**) to document California Brown Pelican fall and winter distribution and abundance and causes of mortality/injury in northern Oregon during the same period. Field work includes monthly surveys of pelicans at major communal roost sites, evaluation of live intakes at the rehabilitation center, and necropsies of dead pelicans. There was unusually high brown pelican injury and mortality during the winters of 2008-09 and 2009-10 in association with extended brown pelican presence in northern Oregon through the winter. Deborah also conducted a study of brown pelican social behavior in captivity at the WCNC with funding from the Kinsman Foundation during spring 2010. Results will include recommendations for pelican husbandry and rehabilitation facility design with consideration of brown pelican territoriality, social bonding and development of dominance hierarchies in captivity. Deborah also served as an avian scientist on the Oregon Department of Fish and Wildlife Community Team to evaluate the marine reserve proposed for Cape Falcon in northern Oregon state waters. Other scientists on this team include **Scott Heppell** (OSU), **Curtis Roegner** (NOAA), and **Noelle Yochum** (OSU).

**Shawn Stephensen** (OCNWR) and **Susan Thomas** (Washington Maritime National Wildlife Refuge Complex), together with assistant project leader **Lorenz Sollmann**, conducted an aerial survey of California Brown Pelicans on 2, 3, and 9 September 2010. The survey extended from Smith River, Del Norte County, northern California (CA) to Tatoosh Island, Clallam County, northern Washington (WA), and included all rocks, reefs, islands, coastal beaches, and waters up to 0.5 mile offshore. A total of 12,313 individual birds were counted in 2010, in comparison with 18,769 birds in 2007, 12,425 in 2008, and 17,926 in 2009. Fewer pelicans were recorded than in previous years, even though the survey covered more of the coast. Aerial surveys were flown in Oregon and southern WA (September 2-3) in a fixed-wing Cessna 185 by **Jack Christopherson**

(Wilderness Air Charters, Inc.) at an altitude of 200 to 800 ft. In Northern WA (9 September), the aircraft was a Cessna 205 operated by **Brad Goldman** (Gold Aero).

**Shannon Fitzgerald** of the Alaska Fisheries Science Center (AFSC), NOAA Fisheries, Seattle, WA, and his cooperators are collecting as many data as possible from seabirds taken as bycatch. Observers who are deployed on commercial fishing vessels in Alaska collect the specimens, which are sent to **Hannah Nevins**, **Michelle Hester**, and **Erica Donnelly** (Oikonos) at the Marine Wildlife Veterinary Care and Research Center, Santa Cruz, CA for full necropsies. Oikonos also analyzes plastic in the stomach contents. Natural food items are returned to the AFSC, where **William Walker** analyses diets. **Jaime Marchetti** (NOAA Observer Program, Honolulu, Hawai'i), who monitors pelagic longline fisheries for tuna and swordfish, provides albatrosses recovered as bycatch from those fisheries for necropsy and food habits analysis.

Fitzgerald also is working with **Ann Edwards** on stable-isotope analysis of feathers to examine the impact of fisheries on albatross foraging strategies and demographics. The necropsy program continues to provide feathers from bycatch in the Alaskan and Hawaiian fisheries. During 2010, collaborators **Maura Naughton** and **John Klavitter** (USFWS) and **Scott Schaffer** and **Melinda Conners** (Tagging of Pacific Predators [TOPP]), submitted additional feather samples from colonies.

**Ed Melvin**, **Troy Guy** and **Sarah Jennings** (Washington Sea Grant) with **Rob Suryan** (OSU) continued to assess the overlap between albatross distribution and groundfish fisheries on the US west coast. They used at-sea observations and telemetry data contributed by many PSG collaborators to create distribution maps for the three North Pacific albatross species. They plan to overlay these data with fishing effort data provided by NOAA Fisheries for both the longline and trawl fisheries. This analysis

will allow them to identify areas where seabird mitigation measures are needed.

The team will promote the voluntary use of seabird avoidance measures by fishermen, by holding workshops at ports along the west coast. Troy and Ed began these efforts in 2010 by conducting workshops in several WA and OR fishing ports. They distributed streamer lines at the workshops, as part of an effort by WA Sea Grant, NOAA, and USFWS to provide these devices at all west coast ports, without cost to the fishermen. In the future, they plan to expand outreach to more ports in OR and WA and to CA. They will continue collaborating with the fishing industry in their work to develop effective seabird avoidance for the west coast fleet.

### OTHER WORK

**Deborah Jacques** (Pacific Eco Logic) and **Glenn Ford** (Ecological Consulting Inc., Portland Oregon) are currently working on a Natural Resource Damage Assessment related to the Gulf of Mexico oil spill in April 2010. [See the Conservation Report in this issue.] In conjunction with **Phil Capitolo** and others, Deborah is counting aerial photographs to develop population estimates for the Eastern Brown Pelican (*Pelecanus o. occidentalis*) and other colonial seabirds that nested in the Gulf during the 2010 breeding season.

**Jo Smith** is working at The Nature Conservancy in Seattle, WA as a marine ecologist. She is developing spatially-explicit eco-regional planning tools for the conservation of marine species and habitats from the coast to the toe of the continental shelf. She is also conducting a simple gap analysis to assess existing marine conservation status in state and federal waters, and working with California Audubon on their marine Important Bird Area designations in WA. Lastly, Jo is exploring marine plastics in seabirds, especially albatross.

**Kim Nelson** (OSU) continued work with Audubon to develop a list of marine Important Bird Areas (IBAs) in Oregon that will benefit seabirds, and that will fit

into the ongoing processes for creating marine reserves and inland IBAs.

**Lora Leschner** is now working part time for Pacific Coast Joint Venture, a group dedicated to migratory bird habitat and restoration. Please see [www.pcjv.org](http://www.pcjv.org) for more information!

## NORTHERN CALIFORNIA

Compiled by **Hannahrose Nevins**

### COLONY MONITORING

**Gerry McChesney** of the San Francisco Bay National Wildlife Refuge Complex, U.S. Fish and Wildlife Service (USFWS), in collaboration with **Rick Golightly** of Humboldt State University (HSU) and others, completed the 15th year of seabird restoration and monitoring on the central coast of California. They focused on monitoring productivity of Common Murre (*Uria aalge*) and other breeding seabirds at several nearshore colonies, including the Devil's Slide Rock restoration site. The studies included surveillance of human disturbance. Data are used by the Seabird Protection Network in their outreach and education to reduce human disturbance (see section on "Education and Outreach," below). In 2010, field staff included **Lisa Eigner**, **Sandra Rhoades**, **Jonathan Shore**, **Mary Davis**, **Crystal Bechaver**, and **Corey Shake**. In addition, they collaborated with **Dan Robinette** (PRBO Conservation Science) to examine foraging activity inside and outside of newly established state marine protected areas. They also worked with **Phil Capitolo** and **Breck Tyler** of the University of California Santa Cruz (UCSC) to conduct an annual aerial survey of murre, Brandt's (*Phalacrocorax penicillatus*) and Double-crested Cormorant (*P. auritus*) colonies in California. Preliminary data from the 2010 season indicate delayed and asynchronous breeding, but higher productivity for murres and Brandt's Cormorants, compared with 2009.

**Russ Bradley**, **Pete Warzybok** (PRBO Conservation Science) and collaborator **Gerry McChesney** (USFWS) conducted population counts and reproductive indices for 12 species of breeding seabirds on Southeast Farallon Island (SEFI), including gulls (*Larus* spp.), storm-petrels (*Oceanodroma* spp.), cormorants, murres, auklets, Black Oystercatcher (*Haematopus bachmani*), Tufted Puffin (*Fratercula cirrhata*), and Pigeon Guillemot (*Cepphus columba*). Bradley reports that 2010 was yet another year of mixed signals on SEFI. Strong upwelling persisted throughout the breeding season. Krill (Euphausiids) were very abundant in at-sea surveys and in the diet of Cassin's Auklet (*Ptychoramphus aleuticus*). With good prey resources, the auklets showed a very high rate of double brooding and had their best reproductive success in PRBO's history. The abundant krill was also an apparent food source for large numbers of humpback (*Megaptera novaeangliae*) and blue (*Balaenoptera musculus*) whales around the island during late summer. A high abundance of juvenile rockfish (*Sebastodes* spp.) later in the season seemed to be linked to high breeding success for Common Murres, Pigeon Guillemots, and Rhinoceros Auklets (*Cerorhinca monocerata*). Murres fed juvenile rockfish to their chicks at unprecedented rates. Despite the high productivity some species, others had low breeding performance. Western Gulls (*Larus occidentalis*) lost many chicks soon after hatch and had another poor breeding year. Brandt's Cormorants were again virtually absent from the colony early in the season. It appears that the pulse of juvenile rockfish availability allowed them to mount somewhat of a breeding effort in late June, though there was significant egg loss and nest abandonment. There were still many unfledged chicks by mid-September. California Gulls (*Larus californicus*) attempted to breed on SEFI for the third straight year, again failing to fledge any young. Both Peregrine Falcons

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(*Falco peregrinus*) and Common Raven (*Corvus corax*) bred on SEFI this year. While the raven nesting attempt failed, this was the first documented breeding event on the Farallones since 1911.

**Sara Acosta** (PRBO Conservation Science) and collaborator **William Merkle** (NPS) reported that 6 species of seabirds were monitored on Alcatraz Island in San Francisco Bay in the 2010 season. **Jennifer Aragon** assisted in data collection. Overall seabird populations were low on Alcatraz, and breeding success seemed to be somewhat poor for most species. The Brandt's cormorant population was down nearly 90%, and nest initiation in some areas were about 1 month later than in recent years. The Western Gull population was also down, around 30% of its peak in 2008. Pelagic Cormorants have been in decline in recent years (the maximum was 20 nests in 1997) and did not breed for a second year in a row. California Gulls began breeding on Alcatraz in 2004 (5 nests) and increased to a maximum of 23 in 2007; in 2010, nest numbers nearly tripled. The Pigeon Guillemot population grew to its highest yet recorded on Alcatraz (90 individuals), and the number of confirmed breeding sites was above the long-term average. The resident pair of Black Oystercatchers (*Haematopus bachmani*) was successful in fledging one chick.

**Mark Rauzon** (Marine Endeavors) participated in the annual Double-crested Cormorant count in San Francisco Bay, along with **Meredith Elliott** (PRBO Conservation Science). Cormorant numbers were recovering from the disastrous breeding season in 2009.

Work is continuing in 2010 on two species of grebes that winter at sea, Western and Clark's (*Aechmophorus occidentalis* and *A. clarkii*). **Daniel W. Anderson** of the University of California Davis (UCD), **Frank Gress** (California Institute of Environmental Studies), **Renée Weems** (MSc student, UCD), and **Kristofer Robison** (MS student, UCD) will be conducting

productivity and nesting surveys at four breeding lakes in northern California: Lake Almanor, Clear Lake, Eagle Lake, and Tule Lake. These data will contribute to a long-term data set initiated in 1992 by Anderson. Beginning in 2010, northern California outreach and management activities for these grebes will be conducted by Audubon California, which was awarded \$541,000 by the *Luckenbach* Trustee Council earlier this year ([http://ca.audubon.org/newsroom/100407\\_grebe.php](http://ca.audubon.org/newsroom/100407_grebe.php)). The 2010 breeding season follows three years of below-average productivity for *Aechmophorus* grebes at Clear and Eagle Lakes, which historically are two of California's most important nesting locations. Continued human disturbance problems and extreme drought are thought to have contributed to recent observations of low productivity for both species.

On 13 December 2010, a regional group of biologists and resource managers convened the California Grebe Working Group at Yolo Bypass Wildlife Area, Davis, CA. The focus was a discussion of the status of colony monitoring and restoration actions, particularly for *Aechmophorus* grebes. There was some discussion of whether to revive PSG's Grebe/Loon Technical Committee, or just to continue annual meetings separately. For meeting notes and participation, contact: **Laird Henkel** (CDFG) [lhenkel@ospr.dfg.ca.gov](mailto:lhenkel@ospr.dfg.ca.gov).

### THREATENED AND ENDANGERED SPECIES

**Susan Euing** (USFWS) and **Meredith Elliott** (PRBO Conservation Science) monitored the Least Tern (*Sternula antillarum browni*) colony at Alameda Point (the former Naval Air Station, Alameda). The colony had another successful reproductive year during 2010. The estimated number of breeding pairs was 302; the number of nests was 320. Of the 619 eggs laid, 493 hatched, giving an 80% hatching success rate. This is the third year in a row when hatching was at or above 80%. In July the colony was heavily preyed upon by Peregrine Falcons and

Red-tailed Hawks (*Buteo jamaicensis*). Despite a minimum of 41 fledglings and 7 adults being taken, an estimated 296 fledglings survived to migrate. Breeding success was 0.98 fledglings per breeding pair. Approximately 14% of eggs were either abandoned or failed to hatch. Crows (*Corvus brachyrhynchos*) were responsible for taking several abandoned and failed-to-hatch eggs at the end of the season. Thirteen eggs were recovered for analysis.

Ashy Storm-Petrel (*Oceanodroma homochroa*) studies were conducted at Santa Cruz Island in 2010 by **Bill McIver** (USFWS, Arcata, California), **Laurie Harvey** (National Park Service [NPS], Ventura, California), **Harry Carter** (Carter Biological Consulting, Victoria, British Columbia), and **Luke Halpin** (Simon Fraser University, Burnaby, British Columbia). Nest monitoring was conducted Orizaba Rock and in 4 sea caves, for comparison to baseline data since 2006 and to previous data since 1995. Parameters included colony size, reproductive success, and timing of breeding. They noted no active storm-petrel nests (and no island spotted skunks) at Cavern Point Cove Caves, where skunks apparently extirpated the storm-petrel colony in 2008. Colony restoration (broadcast vocalizations and artificial nest sites) was initiated at Orizaba Rock in 2008, and resulted in eggs laid at 7 artificial sites in 2010. In 2010, Halpin assessed restoration techniques at these artificial nest sites by recording nocturnal behaviors and vocalizations of Ashy Storm-Petrels with remote cameras and microphones. This work was funded by the Montrose Settlements Restoration Program.

This was the 19th year of the monitoring program for Western Snowy Plovers (*Charadrius alexandrinus nivosus*) in Point Reyes National Seashore (PRNS). Project Leaders were **Natalie Gates** (Wildlife Biologist, NPS), **Sarah Allen** (Science Advisor, NPS), **Lacey Hughey** (Field Technician, NPS), **Andrew Gajewski** (Docent Coordinator, NPS), and **Joseph Stack** (Intern, NPS). The goal of the 2010

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monitoring was to determine abundance, distribution, and breeding success of Snowy Plovers nesting on federal lands in PRNS. An estimated 14-18 plovers bred within the Seashore this year, which was the lowest number of nests since 1998. Predator exclosures were placed around 15 nests. Widespread beach erosion may have eliminated much available nesting habitat this year, which makes the planned 300-acre habitat restoration program more pertinent than ever. Nine of 15 nests hatched at least one egg, or 20 of 42 eggs. Most nest losses were due to abandonment and rodent predation; however, corvid impacts seemed to be mitigated by various predator management strategies, including lethal removal, placement of effigies near nests, and predator exclosures. Seven of 20 chicks survived for at least 28 days after hatching, for a 35% fledging rate. Symbolic fencing and the volunteer-based docent program continued to reduce human disturbance to nesting plovers at PRNS.

Snowy Plover breeding success was monitored in central California on Monterey Bay beaches and Elkhorn salt ponds by **Dave Dixon, Jenny Erbes, Carleton Eyster, Kriss Neuman** (PRBO Conservation Science) and **Jane Warriner**. They were assisted by **Amy Palkovic** (California State Parks), **Laird Henkel** (CDFG), **Bernadette Ramer, Gary Page, and Lynne Stenzel** (PRBO Conservation Science). Preliminary results indicate that 279 juveniles fledged from 403 nests, the fifth-highest number of fledglings ever produced. Factors limiting productivity included avian and mammalian nest predators and avian predation on chicks.

In 2010, **Josh Adams** (USGS) and staff from Haleakala National Park, Maui, Hawai‘i continued to monitor attendance and breeding activities of Hawaiian Petrels (*Pterodroma inexpectata*) (see Hawai‘i Regional Report.)

In northern California, **Deborah Jacques** (Pacific Eco Logic) worked with **Sandra Jerabek** (Tolowa Dunes Stewards) and CDFG on a coastal dune restoration project at Lake Earl to ben-

efit the Western Snowy Plover and other native coastal dune species. This work involved preparing a restoration plan and Mitigated Negative Declaration for removal of European beach grass at the ecologically and culturally sensitive site.

The Marbled Murrelet Effectiveness Monitoring Program continues to monitor the status and trend of Marbled Murrelet (*Brachyramphus marmoratus*) populations and nesting habitat. This is an interagency effort to evaluate the effectiveness of the Northwest Forest Plan (NWF Plan). We have monitored murrelet populations annually from boats since 2000 in the coastal waters of murrelet conservation Zones 1 through 5 (from the US-Canada border to San Francisco Bay). In 2010, Washington surveys were led by **Marty Raphael** and **Tom Bloxton** (U.S. Forest Service-Pacific Northwest Research Station [PNW]) in Zone 1 (Puget Sound through Straits of Juan de Fuca), and by **Scott Pearson** and **Monique Lance** (WDFW) in Zone

2 (outer coast). Oregon and northern California surveys (Zones 3 and 4) were led by **Craig Strong** (Crescent Coastal Research). Annual population estimates for the 5-zone area have ranged from about 17,400 to 23,700 murrelets, with the 2009 estimate 17,800 birds (95% confidence limits were 14,200 to 21,300 birds). A trend analysis conducted in 2009 found that the 5-zone murrelet population declined from 2001 to 2009. Population surveys will continue in 2011. The Habitat Monitoring Team (including **Marty Raphael, Kim Nelson** and **Katie Dugger** (OSU) **Sherri Miller** (U.S. Forest Service-Pacific Southwest Research Station [PSW]), **Beth Galleher** (PNW), **Deanna Lynch** and **Rich Young** (USFWS) recently completed modeling of murrelet nesting habitat relationships in the 5 conservation zones, providing an assessment of nesting habitat distribution and trends through the first 15 years of the NWF Plan (1993-2008). Reports with results of habitat and population monitoring will soon be available at <http://www>.

<http://www>.gov/monitoring/mm-overview.shtml. Other contributors to the monitoring program included **Jim Baldwin, CJ Ralph** and **Linda Long** (all from PSW), plus the many seasonal technicians who made the population surveys possible. **Gary Falxa** (USFWS) coordinates the NWF Plan murrelet monitoring program.

**Brian Cooper** and **Rich Blaha** (ABR, Inc., Fairbanks, Alaska) conducted a study of the extent to which Marbled Murrelets use the drier habitats east of the coastal redwood (*Sequoia sempervirens*) fog zone in northern California. Fifty radar-survey sites were established along the western boundary of the Six Rivers National Forest. The objective is to collect baseline information on locations, flight directions, and passage rates of Marbled Murrelets flying into habitat east of the coastal fog belt during the summers of 2010 and 2011, in order to help determine murrelet distribution and abundance in this forest. This study was funded by the U.S. Forest Service.

The Humboldt Redwood Company, LLC (HRC) continued conservation activities for the Marbled Murrelet under the company's Habitat Conservation Plan (HCP). Project leaders were **Sal Chinnici** and **Mark Freitas**. The HCP requires tracking of murrelet occupancy and numbers over time, using both radar and audio-visual (AV) survey techniques. Surveys were continued in 2010 at the Headwaters Forest Reserve (HFR), Humboldt Redwoods State Park (HRSP), and the Marbled Murrelet Conservation Areas (MMCAs) on HRC forestlands. Collaborators included Mad River Biologists and O'Brien Biological Consulting. A total of 56 radar surveys were conducted; the largest numbers of murrelets were tracked at HRSP and the Allen Creek MMCA. One hundred forty AV surveys were conducted, with the greatest number of detections on one survey at the HFR. AV surveys resulted in detections of occupancy at HFR, HRSP, and the majority of the MMCAs. Summary results are not yet available.

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**Steve Singer** (Singer Environmental and Ecological Services) has continued his long-term monitoring of Marbled Murrelets in the Gazos Creek Watershed in the Santa Cruz Mountains. This project began in 2000. This is the most intensively used site in murrelet Zone 6. Radar monitoring, which was funded by the *Apex Houston* Trustee Council and the Sempervirens Fund, was done in collaboration with **Erin Colclazier** (Hamer Environmental LLP). AV surveys were done with the assistance of **Portia Halbert** of California State Parks and **Terris Kastner** of CDFG. Preliminary results indicate that murrelet numbers in Gazos Creek Canyon have not experienced the significant decline in detections that have been reported at almost all other AV survey locations in Zone 6. Interestingly, detection numbers at Gazos, which had mysteriously collapsed in 2009, returned to normal levels in 2010. The researchers will continue to monitor this site while seeking funding to continue their long-term effort.

### ACOUSTIC MONITORING PROJECT

**Don Croll, Berny Tershy, Abraham Borker, Matthew McKown** of the Coastal Conservation and Action Lab (CCAL) at UCSC are conducting a number of field projects in northern California to test the effectiveness of passive acoustic sensors for monitoring seabird populations. These devices, coupled with automated signal processing techniques, could provide researchers and managers with a low-cost, low-impact tool for detecting presence/absence of rare and elusive seabird species, and for measuring changes in relative abundance at breeding colonies. The investigators have deployed a number of commercially available acoustic sensors at colonies in the region, and they are developing wireless devices.

The team is doing field tests at Forster's Tern (*Sterna forsteri*) colonies in Don Edwards Wildlife Refuge in South San Francisco Bay, with partner **Josh Ackerman** (USGS). They will determine if measures of acoustic activity

(mean calls/min) correlate with abundance of breeding pairs (active nests/week) at. In 2009, colony size explained as much as 94% of the variation in mean calling rates among five colonies (28-108 nests). They were able to discriminate between juvenile and adult vocalizations at colony sites, and determined that fledgling calling activity is correlated with weekly numbers of fledging birds. 2010 data from the same colonies will be used to test for monitoring year-year changes in relative abundance and fledgling success at colony sites.

In a second project with partners **Michelle Hester** (Oikonos), **Gerry McChesney** (USFWS), and **Russ Bradley** (PRBO Conservation Science), the CCAL team will determine if passive acoustic sensors are an effective tool for detecting and monitoring nocturnal burrow/crevice nesting seabirds. They have currently deployed sensors on Southeast Farallon Island and Año Nuevo Island and are comparing acoustic indices of seabird activity with abundance data gathered by partner organizations for Ashy Storm Petrel *Oceanodroma homochroa*, Leach's Storm Petrel (*Oceanodroma leucorhoa*), Cassin's Auklet (*Ptychoramphus aleuticus*), and Rhinoceros Auklet (*Cerorhinca monocerata*).

In a third study with partner **Portia Halbert** (California State Parks), the CCAL team is determining how Marbled Murrelet (*Brachyramphus marmoratus*) counts from passive acoustic sensors compare to traditional point counts by human observers in forested habitats. They will compare murrelet counts by human observers to murrelet calling rates on recordings from the acoustic sensors. Automated sensors deployed at count locations throughout the breeding season will also provide data on the variability of calling rates at low-density breeding areas, data that would be prohibitively expensive to collect with human observers. If effective, acoustic sensors might allow managers to stretch limited funding by increasing the spatial and temporal scale of murrelet monitoring efforts. Identifying low-density sites

is a priority in this declining population of murrelets.

### FORAGING ECOLOGY, PELAGIC STUDIES

**Jim Lovvorn** (Southern Illinois University), **John Takekawa**, and **Susan Wainwright-de la Cruz** (U.S. Geological Survey, Western Ecological Research Center) have initiated a project to estimate the total number of Surf Scoter (*Melanitta perspicillata*) and other wintering diving ducks that can be supported in San Pablo Bay (part of the San Francisco Bay estuary system), based on the birds' daily food requirements and the availability of quality underwater habitat. This model may assist managers to predict changes in diving duck population size under different scenarios of human-related changes, including sea level rise, geomorphologic change, increased disturbance, and habitat restoration. The work is being done in partnership with Oikonos and is funded by the San Francisco Foundation.

**Jim Harvey** and graduate students at Moss Landing Marine Laboratories (MLML), California State Universities are working on seabird diets, distribution, and foraging ecology. **Danielle Frechette** of MLML and the National Oceanographic and Atmospheric Administration (NOAA) is investigating the effects of avian predation on salmonids. She is identifying predators on juvenile coho (*Oncorhynchus kisutch*) and steelhead (*Salmo gairdneri*) using recoveries of passive integrated transponder (PIT) tags from Año Nuevo Island and Southeast Farallon Island. Data include timing of predation. She is also examining movements of adult Western Gulls (*Larus occidentalis*) using radio-telemetry.

**Melinda Nakagawa** (MLML) is investigating the response of Sooty Shearwaters (*Puffinus griseus*) to environmental variability (winds, upwelling) using satellite telemetry data collected by **Josh Adams** (USGS, MLML) in the California Current (2008-2009). This research is funded by California Sea Grant.

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**Marilyn Cruickshank** (MLML) is researching genetic variation in Rhinoceros Auklets from around the Pacific Rim, from Japan to California. In 2010 she collected samples with Dr. Yutaka Watanuki (Hokkaido University, Japan) and students led by **Motohiro Ito** on Teuri Island, Japan. Marilyn will collaborate with **Cathryn Abbott** (Pacific Biological Station, British Columbia) on genetic analyses.

**Lisa Webb** (MLML) is studying the spatio-temporal variability of Brandt's Cormorant diets during the non-breeding season in the Monterey Bay area. Specifically, she will determine if diet composition differs among three winter roost sites (Año Nuevo Is., Moss Landing and Monterey), within the season, and between two consecutive non-breeding seasons with differing oceanographic conditions, 2006-07 and 2007-08.

**Scott Schaffer** (UCSC) reports that the Tagging of Pacific Pelagics (TOPP) program, as part of the Census of Marine Life, celebrated its grand finale in October 2010. This officially marked the end of the program; however, field work will continue. **Melinda Conners** is picking up where **Michelle Kappes** left off and is focusing on the diets of Laysan and Black-footed Albatrosses (*Phoebastria immutabilis* and *P. nigripes*) for her doctoral thesis under Shaffer. In addition to tracking the at-sea movements of the albatrosses, we'll be conducting our third field season studying Red-footed and Masked Boobies (*Sula sula* and *S. dactylatra*). **Rachael Orben** is conducting her doctoral thesis with Shaffer on kittiwakes and murres in the Bering Sea (see Alaska Regional Report). For more information, contact Shaffer at scott.shaffer@sjsu.edu

**Nathan Jones** and **Brian Hoover** (MLML) are studying diets and foraging dynamics of murres (*Uria* spp.) and kittiwakes (*Rissa* spp.) in the Bering Sea (see Alaska Regional Report).

### CONSERVATION, RESTORATION, AND OIL SPILL PREPAREDNESS

**Deborah Jacques** of Pacific Eco Logic began a 3-year monitoring

program for breeding Western Grebes (*Aechmophorus occidentalis*) at Lake Earl California, to document grebe response to restoration actions on this coastal lake. Restoration is being led by Ducks Unlimited (**Jeff McCreary**) in cooperation with the California Department of Fish and Game (CDFG), with funding by the *American Trader*, *Kure*, and *Stuyvesant* Trustee Councils. Project actions include improvements to fencing to exclude cattle from the wetland, and a boater awareness program to reduce human disturbance at the colony. Colony monitoring will also serve to evaluate effects of lagoon water level management on grebes.

**Bernie Tershy** (Island Conservation) is working toward global assessments including developing a database of the world's threatened seabird breeding islands. He is prioritizing threatened seabird breeding islands for invasive species eradication, land conservation, and other threat reduction measures.

**Michelle Hester**, **Ryan Carle** of Oikonos Ecosystem Knowledge (Oikonos), and **David Sands** (Go Native) continue island restoration of breeding habitat for burrow-nesting Rhinoceros Auklets at Año Nuevo State Park. Restoration techniques include planting of native vegetation, installation of nest boxes, and building a habitat ridge to minimize trampling of habitat area by pinnipeds. Ceramic nest boxes were designed with the help of Rebar Design and students from California College of the Arts. Funding is by the *Command and Luckenbach* Restoration Settlements.

**Gerry McChesney** worked with **Rick Golightly**, **Janet Thibault** (HSU), **Harry Carter** (Carter Biological Consulting), and **Mike Parker** (HSU) to develop Common Murre oil spill restoration options for the *Stuyvesant* and other spills in northern California. A report summarizing restoration feasibility at Redding Rock, Humboldt County, CA has been completed and a separate summarizing other potential projects is in preparation.

**Jeff Davis**, **Phil Capitolo**, **Dave Lewis**, **Brad Keitt**, **Ryan DiGaudio**, and **Glenn Ford** (UCSC); **Breck Tyler**, Principal Investigator) continued aerial surveys of marine birds and mammals in California continental shelf waters in 2009 and 2010 under contract with the Office of Spill Prevention and Response (OSPR) in the California Department of Fish and Game (CDFG); coordinator is **Laird Henkel**. The surveys are designed to collect baseline distribution and abundance data and to maintain rapid-response capabilities for oil spills. During the past year, surveys were conducted from Mendocino to San Diego counties. In May 2010, this team (**Glenn Ford**, Principal Investigator) responded to the Deepwater Horizon Oil Spill in the Gulf of Mexico, providing the USFWS with real-time distribution and abundance data for affected areas.

### MORTALITY AND POLLUTION

**Erica Donnelly** is doing graduate study under **Jim Harvey** (both of MLML) to study the relationship between cephalopod prey species and amounts of plastic ingested by Northern Fulmars (*Fulmarus glacialis*) collected in Monterey Bay during 2003 and 2007 die-offs. Her research is partially funded by the NOAA Marine Debris Program (Oikonos).

Hannah Nevins (MWVCRC and Oikonos), **Erica Donnelly** (MLML) and **Jim Harvey** (MLML) coordinated the Coastal Ocean Mammal/Bird Education and Research Surveys (BeachCOMBERS). Citizen scientists collect systematic data of beach-stranded marine mammals and birds in central CA. In 2009, deposition of several species was significantly increased: Brandt's Cormorants, loons (*Gavia* spp.), and grebes (*Aechmophorus* spp.). In the winters of 2009 and 2010 both live and dead strandings of Brown Pelicans (*Pelecanus occidentalis*) indicated lack of normal forage fish; the birds had switched to unusual prey such as squid and fat innkeeper worms. Necropsies indicated that starvation was the primary cause of these mortality events.

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The Central California Seabird Health Study is based at CDFG's Marine Wildlife Veterinary Care and Research Center in Santa Cruz (MWVCRC). The project provides a regional information center for federal, state, and local resource managers. Investigators **Hannah Nevins, Dave Jessup, Melissa Miller, Amy Wells, and Colleen Young** continue quantitative assessment of chronic oiling and other mortality factors affecting Common Murres and other California seabirds, using specimens from beach survey programs and rehabilitation centers. This work is supported by OSPR and the Wildlife Health Center at the University of California Davis. Collaborators include **Michelle Bellizzi** (International Bird Rescue), Native Animal Rescue, SPCA of Monterey County, and **Jim Harvey** (MLML, BeachCOMBERS.). The sources of oil from both shipwrecks and seeps are determined by oil fingerprinting, in coordination with **Marida Martin and Susan Sugarman** (CDFG, Petroleum Chemistry Lab) and **Laird Henkel** (OSPR). Various sources, such as the sunken *Luckenbach*, continue to contribute to seabird mortality in central California.

**Corrine Gibble**, a new Ph.D. student studying with **Raphe Kudela** (UCSC) will be investigating the role of harmful algal blooms on marine and estuarine birds in central CA.

The Gulf of the Farallones Beach Watch program saw some changes during 2010. The Volunteer Coordinator and Data Manager, **Shannon Lyday**, has left the program to pursue a graduate degree at the Hawaii Pacific University with David Hyrenbach. **Kirsten Lindquist** has been hired to replace Shannon. Kirsten has jumped into the job with both feet by preparing data and information for staff presentations at the California and the World Ocean 2010 meeting in San Francisco in September. Beach Watch data-query can be found on-line. More information is available from **Jan Roletto** ([Jan.Roletto@noaa.gov](mailto:Jan.Roletto@noaa.gov)) or Kirsten Lindquist ([KLindquist@farallones.org](mailto:KLindquist@farallones.org)); or check out the data

query system at <http://www.farallones.org/BeachData/BeachWatchData.php>

### EDUCATION AND OUTREACH

**Karen Reyna and Sage Tezak** of the Gulf of the Farallones National Marine Sanctuary (National Oceanographic and Atmospheric Administration [NOAA]) coordinated the Seabird Protection Network (SPN). Since August 2005, SPN has conducted targeted outreach to pilots, boaters and general ocean users in an effort to reduce human disturbance to breeding seabird colonies along the central California coast. A Wildlife Disturbance Reporting Form has been developed in order to help resource managers target education efforts, track repeat offenders, and target enforcement efforts. The packet includes a Wildlife Disturbance Reporting Form; protocols to report a wildlife disturbance incident; how best to complete the reporting form; and a matrix describing wildlife laws, regulations and responsible authorities. For more information or to obtain a Wildlife Reporting Packet contact California. [Seabirds@noaa.gov](mailto:Seabirds@noaa.gov).

Since 2006, **Carol Keiper** (Oikonos Ecosystem Knowledge) has used albatross boluses provided by USFWS as powerful tools for promoting ocean conservation and stewardship. The Black-footed Albatross education outreach project uses the bird as an "ambassador for a clean ocean." During 2006-2010, more school groups received important conservation messages about preventing plastic pollution. Groups learning about conservation with boluses increased by 45% for students, 196% for teachers, 110% for schools, and 30% for numbers of classes. The benefits of hands-on activities from this program included changes in student behavior, and an increase in community awareness, conservation actions, and stewardship activities. Students used dissected framed boluses to create marine debris exhibits for public outreach; posters with bolus photos created by students were used as an important feature for environmental action

by sharing their information about the impact of plastic debris on the ocean. Students also designed and sold a fully compostable hemp bag, to discourage the use of plastic bags, and they stenciled storm drains around their schools with conservation messages. Students, teachers, and the general public participated in coastal and waterway clean-ups, and students participated in campus debris surveys and clean-ups. We invite you to download our free educational activities at <http://www.oikonos.org/projects/oceanstewardship.htm>

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## SOUTHERN CALIFORNIA

Compiled by Jennifer Boyce

**Bob Schallman** (Naval Weapons Station Seal Beach monitors the 3-acre breeding colony of California Least Terns (*Sternula antillarum browni*) each year), in cooperation with the Seal Beach National Wildlife Refuge and Friends of Seal Beach National Wildlife Refuge. Ongoing research includes breeding success, growth rates, and site fidelity. Additionally, an innovative weed management program in which salt water is applied, thereby reducing the amount of chemical herbicide required, has proven very successful. Schallman is also measuring avian utilization of Anaheim Bay each month. The surveys were originally implemented to determine use of Anaheim Bay by the recently delisted Brown Pelican (*Pelecanus occidentalis*), but the work continues to tease out trends of use by several avian guilds.

**Martin Ruane** (Natural Resources Manager, U.S. Navy), **Francesca Ferrara** (Wildlife Biologist, Tetra Tech EMI), and **Rebecca Kelley** (Wildlife Biologist, Tetra Tech EMI) are monitoring nesting colonies of California Least Terns at Naval Base Ventura County (NBVC), Point Mugu. Monitoring is conducted by walking through the colony to find and track nests and observing colony and nests from blinds. Adaptive predator management is done each season to

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aid in recovery. During the 2010 nesting season it was estimated that 601 pairs of least terns initiated 708 nests. Number of nests and pairs were the highest recorded. However, nesting and fledging success were lower than recent years, due to predation on chicks and fledglings, high winds, nest abandonment, and possible shortage of prey.

NBVC Port Hueneme is home to a small nesting colony of Brandt's Cormorants (*Phalacrocorax penicillatus*), one of the few colonies on the southern California mainland. The cormorants began nesting on the site in 2007, when seven nests were documented, and has increased in size each year since its inception. A peak of 90 adults and 71 fledglings were documented in 2009. In 2010, the numbers rose to a peak of 150 adults and 108 fledglings. The colony is monitored for population and breeding success.

**Phil Capitolo, Jeff Davis, Peter Gaede, and Breck Tyler**, Principal Investigator (University of California, Santa Cruz [UCSC]), in collaboration with **Gerry McChesney** of the U.S. Fish and Wildlife Service (USFWS), conducted aerial photographic surveys of colonies of Brandt's and Double-crested (*P. auritus*) Cormorants on the Channel Islands and along the mainland coast south of Point Conception. These surveys have been conducted annually in April–June since 1991. Breeding population estimates have not yet been determined from 2010 photographs, but numbers of nests for both species appeared similar to or greater than in recent past years. Conspicuously large numbers of Brandt's Cormorants were along the north shore of Santa Rosa Island and at San Nicolas Island.

**Laurie Harvey** (National Park Service) continues to oversee seabird projects in the Channel Islands National Park under the Montrose Settlements Restoration Program. In 2010, three seabird habitat restoration projects were continued. Reproductive effort, success, and phenology of Cassin's Auklets (*Ptychoramphus aleuticus*; CAAU) were monitored on Scorpion Rock, Santa Cruz Island, as well as at a reference site at

Prince Island (San Miguel Island), in collaboration with **J. Adams** of the U.S. Geological Survey. Habitat restoration work was continued at Scorpion Rock. Reproductive effort, success, and phenology of Ashy Storm-Petrels (*Oceanodroma homochroa*) were monitored on Orizaba Rock and in 4 sea caves at Santa Cruz Island by **Bill McIver** (USFWS), **Harry Carter** (Carter Biological Consulting), and **Laurie Harvey**. Social attraction and artificial nest site project components were successfully implemented. (See also Northern California report.) Reproductive effort, success, and phenology of Xantus's Murrelets (*Synthliboramphus hypoleucus*; XAMU) were monitored at Santa Barbara Island (SBI). Vegetation restoration for XAMU and CAAU nesting habitat was continued and expanded to four sites on SBI. Social attraction for Cassin's Auklets was continued on SBI.

Pilot studies were initiated of XAMU nesting behavior on SBI using nest cameras, and assessment of the impacts of Barn Owls (*Tyto alba*) on alcids nesting on SBI.

At-sea surveys were conducted in 2009–2010 to assess distribution and abundance of XAMU and CAAU, around SBI, as well as the density and distribution of prey resources and zooplankton and the physical properties of the water. Collaborators included

**Laurie Harvey, Darrel Whitworth** of the California Institute of Environmental Studies, and **Nina Karnovsky** of Pomona College. Karnovsky was assisted by Pomona College undergraduates. This work was done as part of the Montrose Settlement Restoration Program, which is working to restore Xantus's Murrelets and Cassin's Auklets to Santa Barbara Island. Participants included **Kristen Boysen, Nell Baldwin, Ali Corley, and Nik Tyack**.

**Michael Force** (Kelowna, British Columbia [BC], Canada) was the principal seabird observer on several research cruises of the U.S. National Oceanographic and Atmospheric Administration (NOAA). He was monitoring pelagic birds in the California Current and the

Southern California Bight, among other areas.

**Lisa T. Ballance** and **Robert Pitman** (NOAA) continue to lead at-sea surveys of seabird distribution and abundance in the eastern Pacific. See the Hawai'i report for more information.

**Kathy Keane** (Keane Biological Consulting) and her colleagues continue to oversee the nesting site of California Least Terns (CLT) at Los Angeles Harbor, as well as nesting in the harbor by Caspian Terns (*Hydroprogne caspia*) and Elegant Terns (*Thalasseus elegans*). They also monitored a dredging and restoration project at Upper Newport Bay from 2006 through 2010 to ensure there was no effect on the CLT and 3 other endangered species. Kathy presented two papers at the PSG's February 2010 meeting in Long Beach: "Status of the Endangered California Least Tern: Population Trends and Indicators for the Future," and "Overview of California Least Tern Foraging." She also presented a poster on the status of the CLT population at the World Seabird Conference in September 2010, and she is planning to present results to the CLT working group and the Western Section of the Wildlife Society in early 2011. She is also working on a research project for the U.S. Army Corps of Engineers regarding CLT foraging with respect to proposed Corps dredging locations in southern California.

**Pat Baird** (Centre for Wildlife Ecology, Simon Fraser University, Burnaby, BC, Canada, and Kahiltna Research Group, California State University Long Beach) is continuing research on California Least Terns in southern California, comparing their foraging areas and prey over a 12-year period, supplemented by field work, to detect any kind of regime shift. She also is finalizing a migratory management plan for the Western Sandpiper (*Calidris mauri*) through the Western Flyway, from Panama to Alaska. As well, Pat is writing a commentary on an Environmental Impact Report for enhancement of a lagoon system in Long Beach, California.

**Rebecca Lewison** and **Kate Goodenough** are investigating the foraging

movement and diet analysis of Gull-billed Terns (*Gelochelidon nilotica vanrossemi*; GBTE) nesting in San Diego, California. Intra-guild predation (IGP) is a widespread phenomenon that occurs across many taxa; it is a combination of predation and competition, in which the predator competes for resources and obtains immediate energetic gains from its prey. IGP has been shown to strongly influence community dynamics; it also can present challenges in species conservation. In San Diego Bay, IGP by GBTE has been observed during the past 11 years on California Least Terns and Western Snowy Plovers (*Charadrius alexandrinus*). The focus of the research is to investigate the importance of this IGP to the predator (GBTE) and its primary prey, the California Least Tern. This project will describe core foraging areas and Least Tern colony site attendance by GBTEs through the use of a fine-scale movement analysis. In addition, this project will characterize the diet of adult and chick GBTE in San Diego using stable isotope analysis, and further, will determine the relative importance of California Least Terns and Snowy Plovers to the GBTE diet.

In February 2010, several undergraduate students working with **Nina Karnovsky** at Pomona College presented results of their seabird research at PSG's February 2010 meeting in Long Beach. **Derek Young** won best student poster for his poster on bimodal foraging in Little Auks (Dovekies; *Alle alle*). **Derek Buchner** and **Nell Baldwin** presented a poster comparing PIT tags and feeding watches in Little Auks. **Elizabeth Ng** and **Amy Briggs** (with coauthor **Wayne Trivelpiece**) presented a poster on the fish component of *Pygoscelis* penguin diets. **Julia Gleichman** (with coauthor **David Hyrenbach**) presented a poster on diving in Wedge-tailed Shearwaters (*Puffinus pacificus*). **Augie Lagemann** presented a poster comparing Xantus's Murrelet distributions from George Hunt's survey in the 1970s to those in 2009. **Zachary Brown** gave a talk on Little Auk diving, and **Kristen Boysen** (with coauthors **Harry Carter**, **Darrel**

**Whitworth**, and **Laurie Harvey**) gave a talk on seasonal dynamics of at-sea Xantus's Murrelet behavior, for which she was runner-up for best student paper.

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## NON-PACIFIC UNITED STATES AND CARIBBEAN

Compiled by Julie C. Ellis

### COLONY STUDIES

**Linda Welch, Steve Agius** of the Maine Coastal Islands National Wildlife Refuge (NWR) and **Scott Hall** (National Audubon Society) placed 30 geolocators on Arctic Terns (*Sterna paradisaea*). The U.S. Fish and Wildlife Service (USFWS), Migratory Birds Program provided the geolocators. In June 2010, researchers trapped incubating Arctic Terns and equipped them with 1.6g geolocators on Metinic Island and Eastern Egg Rock. The units will allow us to determine the route used by the terns during their annual migration, based on the length of daylight and the time of sunrise and sunset. Researchers will need to recapture the terns in 2011 to access the data.

In August 2010, **Welch** captured seven Greater Shearwaters (*Puffinus gravis*) along the coast of Maine and equipped them with 32g SirTrack Kiwisat satellite transmitters. The Refuge is hoping to identify foraging hotspots, migratory pathways, gather information on residency time in the Gulf of Maine, and begin to study potential conflicts with offshore energy development. Data will be provided to a graduate student at Memorial University in Newfoundland, for comparison with ship-based observations of greater shearwater in the Gulf of Maine.

**Linda Welch, Sarah Spencer** (Maine Coastal Islands NWR), **Scott Hall** (National Audubon Society), and **Tony Diamond** (University of New Brunswick) deployed TechnoSmart micro-GPS units on 14 Atlantic Puffins (*Fratercula arctica*) breeding on four islands along the Maine coast. The objective was to deploy the units for 3-5 days, and gather fine scale detail on the birds

foraging habitat use during the chick-rearing period. They were only able to recover one GPS unit, and it had failed to record any data. All other puffins avoided returning to their burrows until the GPS units fell off of their backs. The refuge is working with another manufacturer to determine if a different product design may be more suitable for deployment on puffins.

**Sarah Spencer** (Department of Environmental Conservation, University of Massachusetts) is completing her thesis work on foraging ecology of Atlantic Puffins on Petit Manan Island in the Gulf of Maine. She is cooperating with **Linda Welch** and with **Paul Sievert** of the U.S. Geologic Survey (USGS), Massachusetts Cooperative Fish and Wildlife Research Unit and the Department of Environmental Conservation, University of Massachusetts Amherst. Sarah has developed a predictive model for identifying sex of breeding puffins on Petit Manan Island using morphometrics, has characterized diving activities of breeding puffins on Petit Manan Island, has summarized burrow characteristics for alcids nesting on Petit Manan Island, and is identifying potential foraging habitat using temperature-depth recorders and oceanographic conditions. She found puffin sex was best predicted by culmen length and bill depth. Mean burrow diameters for Razorbills (*Alca torda*), Atlantic Puffins, Black Guillemots (*Cephus grylle*), and empty burrows were significantly different. There was no difference in the use of natural versus artificial burrows between puffins and guillemots. Puffins made nearly 60% of dives between 0400-0800 and 1600-2000, averaging  $276.4 (\pm 84.7)$  dives per day, with 86% of dives less than 15 m, a maximum depth of 40.7 m, and average foraging site temperature of  $10.98^{\circ}\text{C} (\pm 0.92)^{\circ}$ .

**Katie Kauffman** (Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts Amherst) is completing her master's thesis on Razorbill (*Alca torda*) diving behavior, reproductive success, and chick diet at Matinicus Rock, Maine. Advised by **Paul Sievert**, she is also

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collaborating with **Scott Hall** (National Audubon Society Seabird Restoration Program) and USFWS personnel from Maine Coastal Islands National Wildlife Refuge. Katie is assessing diving behavior from time-depth recorders (four individuals), colony reproductive success (six seasons), and chick diet composition and variability (five seasons).

Maine Coastal Islands NWR is also working with graduate student **Laura Kennedy** at the University of Maine to document the abundance and distribution of pelagic seabirds off the coast of Maine. Laura is conducting daily observations aboard a commercial whale watching vessel; she records information on the track of the vessel, species of seabirds observed, number of birds observed, flight heights, bird behavior, and association with marine mammals. This is the fourth year of data collection and a final report is anticipated this winter.

**Julie Ellis** (Tufts University) continues long-term research on ecology of Great Black-backed Gulls (*Larus marinus*) and Herring Gulls (*L. argentatus*) at the Shoals Marine Laboratory on Appledore Island, Maine. This year, she worked with **David Bonter** (Cornell Lab of Ornithology) and undergraduate students to investigate factors affecting reproductive success of Herring Gulls, rates of extra pair paternity in Great Black-backed Gulls, reproductive success of a Lesser Black-backed Gull (*L. fuscus*) X Herring Gull pair; she also continued a long-term gull banding and monitoring project. During Fall 2010, Julie also investigated potential causes of cyclic mass mortality events in Common Eiders (*Somateria mollissima*) at Cape Cod, Massachusetts. Her collaborators in this work were the U.S. Department of Agriculture, National Park Service (Cape Cod National Seashore), USFWS, New Hampshire Veterinary Diagnostic Laboratory, Southeastern Cooperative Wildlife Disease Study, and USGS (National Wildlife Health Center).

**Jeff Spedelow** of the USGS-Patuxent Wildlife Research Center (PWRC) continues to oversee PWRC's long-term cooperative research on the

metapopulation dynamics and ecology of endangered Roseate Terns (ROST; *Sterna dougallii*) in the Massachusetts-Connecticut-New York region. Jeff worked during the 2010 breeding season on two islands in Buzzards Bay, Massachusetts (BBMA), in collaboration with **Carolyn Mostello** (Massachusetts Division of Fisheries and Wildlife) and colleague **Ian Nisbet**.

During the terns' post-breeding dispersal period (PDP; 17 July to 16 Aug), Jeff visited various staging sites in the "Cape and Islands" area of southeastern Massachusetts. Collaborators were **Ellen Jedrey**, **Edie Ray**, and other volunteers from Massachusetts Audubon's Coastal Waterbird Program. No paid seasonal staff were hired in 2010, due to lack of funding, which forced a cutback in fieldwork. Nonetheless, with assistance from Mostello and her volunteers, Jeff was able to trap 720 adult ROSTs and put on 384 new color-band combinations, so it was thought that more than 60% of the breeding ROSTs in BBMA were color-banded by the end of the 2010 nesting season. For the first three weeks of the PDP, Jeff focused on determining the feasibility of studying post-fledging parental care at two sites. During the final two weeks of the PDP, Jeff visited several other staging sites to see if there were seasonal differences in their use from prior years (there were). Jeff also visited a small shoal south of Muskeget Island in Nantucket Sound for the first time, where he resighted 225 different color-banded adult ROSTs in a 3-hour period—about 10% of all those thought to still be alive since color-banding at BBMA was resumed in 2004.

Jeff stopped fieldwork in mid August to finish analyses for his presentation at the 1st World Seabird Conference (estimating intercolony movement and fidelity rates in ROSTs). As of the end of Oct 2010, he still has "a ton" of data entry to do and hopes to get several manuscripts written over the winter.

**Sarah Trefry** continued her PhD (with **Tony Diamond**, University of New Brunswick, Canada) on mating system,

sex ratios, dimorphism and movements of Magnificent Frigatebirds (*Fregata magnificens*) on Barbuda in the Eastern Caribbean.

### PELAGIC STUDIES

**Dick Veit** and PhD students **Marie Martin** and **Tim White** are working with USFWS and Minerals Management Service [now the Bureau of Ocean Energy Management, Regulation and Enforcement] to map the distribution of pelagic birds off the US east coast, with special interest in the location of hotspots. Dick is also studying the influence of oceanic climate upon southward dispersal of North Atlantic alcids. **Holly Goyert**, a PhD student in Dick's lab, is studying the offshore distribution and associations of Common (*Sterna hirundo*) and Roseate Terns in the northwest Atlantic. Holly is using a Generalized Additive Model to analyze vessel-based data from 2006-2009. She has found a significant association between densities of terns and tuna (*Thunnus* spp.) within 0.3 km<sup>2</sup>. This suggests that terns may be relying on local enhancement or commensal relationships with tuna to locate and access prey. This research not only introduces the first and only set of longitudinal data for at-sea distribution of terns in the northwest Atlantic, but also offers the first documentation of a statistical association between Common or Roseate Terns and tuna.

The South Carolina Cooperative Research Unit is continuing to study reproductive ecology of nearshore seabirds in the state. **Gillian Brooks**, under the supervision of **Patrick Jodice**, completed her second field season examining reproductive success and causes of nest failure in Black Skimmers (*Rhynchops niger*) and Least Terns (*Sternula antillarum*).

### OIL SPILL DAMAGE ASSESSMENT

**Patrick Jodice** and **Lisa Eggert** have also been cooperating with numerous partners, predominantly BioDiversity Research Institute, to measure survival rates of Black Skimmers and Brown Pelicans (*Pelecanus occidentalis*)

in the northern Gulf of Mexico, as part of the assessment following the *Deepwater Horizon* oil spill of April 2010. **Jodice** and **Will Mackin** are continuing their tracking studies of Audubon's Shearwaters (*Puffinus lherminieri*) and White-tailed Tropicbirds (*Phaethon lepturus*) in the Bahamas; in 2010 they deployed 6 geolocators on Audubon's Shearwaters at islands in the Cay Sal Bank region of the Bahamas, which is the closest breeding ground to the Gulf of Mexico for this species.

A team from California headed by **Glenn Ford** (University of California Santa Cruz) responded during the *Deepwater Horizon* spill, providing the USFWS with real-time distribution and abundance data for affected areas. **Deborah Jacques** (Pacific Eco Logic) worked on wildlife response for International Bird Rescue, and participated in search and collection of oiled birds in Mississippi, Alabama and Florida. In conjunction with **Phil Capitolo** and others, Deborah is counting aerial photographs to develop population estimates for the Eastern Brown Pelican (*Pelecanus occidentalis*) and other seabirds that nested in the Gulf during the 2010 breeding season.

(See also the Conservation Report in this issue.)

#### OTHER WORK

Wherever possible, **Jennifer Wheeler** (International Waterbird Coordinator, USFWS) has been trying to promote seabird conservation at the national and international level. Working with **David Irons** and others in USFWS, she assisted in arranging sponsorship and participation from the agency for the World Seabird Conference. USFWS and several other national and international organizations contributed to the 2010 report, "State of the Birds: Climate Change." This report highlighted the vulnerability of oceanic birds and recommended conservation actions. The U.S. North American Bird Conservation Initiative took a step forward in acknowledging the needs of seabirds by endorsing the Marine Bird Conservation Regions (BCRs) of the Waterbird Conservation for the Americas Partnership, within the boundaries of the US (first proposed in 2002). The endorsement recognizes that

Canada and Mexico use different systems; Jennifer will be working with **Deb Hahn**, **Humberto Berlanga**, **Garry Donaldson**, and **Andrew Courtier** to integrate the marine BCR and ecoregion systems in the three nations.

Jennifer also continues to spearhead the Caribbean Seabird Initiative—Invasives, a multi-partner project to increase regional capacity and funding for invasive species eradication in the Caribbean, to benefit seabirds. A series of newsletters is reporting on issues and projects. These include: funding by the National Fish and Wildlife Foundation; prioritizing of islands for eradication of exotics, by Island Conservation in cooperation with the Society for the Conservation and Study of Caribbean Birds; an international workshop, "Regional Action to Combat Invasive Species on Islands," which included a focus on the Caribbean; and a census of breeding seabird islands in the Eastern Caribbean by the group Environmental Protection in the Caribbean. A further project, "Mitigating the Threat of Invasive Alien Species on the Insular Caribbean," was carried out by CABI (an international organization for sustainable agriculture and conservation), the United Nations Environment Program, and the Global Environment Facility project.

**Jessica Hardesty** (American Bird Conservancy) helped USFWS and the Vermont Center for Ecostudies conduct a workshop in Santo Domingo on 2-4 November 2010. The primary goal was to increase the involvement of countries within the range of the Black-capped Petrel (*Pterodroma hasitata*), through hands-on engagement in planning for conservation action. This species has been designated a USFWS Migratory Bird Program Focal Species, so **Elena Babij** of USFWS Migratory Bird Management has led drafting of a status assessment (<http://www.fws.gov/birds/waterbirds/petrel/>). Workshop participants refined and validated a draft range-wide plan for the species. It should increase awareness of the conservation challenges faced by montane forest biota on Hispaniola, and should promote international collaboration between the Caribbean and North America.

#### HAWAII

Compiled by **Holly Freifeld**

**Nick Holmes**, **Trevor Joyce**, **Jessi Hallman**, and **Emily Haber** (Kauai Endangered Seabird Recovery Project) collated auditory surveys from 2006 to 2009 to document the distribution of threatened and endangered small procellariids on Kauai, with the aim of identifying colonies suitable for predator control and mitigation of habitat loss. Species included Newell's Shearwaters (*Puffinus auricularis newelli*), endangered Hawaiian Petrels (*Pterodroma sandwichensis*), and Band-rumped Storm-Petrels (*Oceanodroma castro*; a candidate for listing). Among the results are nine new Newell's Shearwater breeding locations and the apparent extirpation of three colonies that had been active in the 1980s and 1990s. In addition, three Hawaiian Petrel breeding locations were found (including the first documented on Kaua'i) and multiple Band-rumped Storm-Petrel calling hotspots along the Na Pali coastline. Results have been submitted to the U.S. Fish and Wildlife Service.

Conservation of Newell's Shearwaters is in birthing stages at the Upper Limahuli Preserve, in conjunction with the National Tropical Botanical Gardens (**David Burney**) and the Kauai Endangered Seabird Recovery Project. An ungulate-proof fence encompassing the 160-hectare preserve was finished in late 2009; pigs (*Sus scrofa*) were removed, and trapping of cats (*Felis sylvestris*) began in early 2010. Barn Owl (*Tyto alba*) and rat (*Rattus spp.*) control are among planned activities.

**Trevor Joyce** (Scripps Institute of Oceanography) and **Nick Holmes** (Kauai Endangered Seabird Recovery Project) deployed six geolocators from the British Antarctic Survey on adult Newell's Shearwaters from Kilauea Point National Wildlife Refuge, during the non-breeding season from October 2009 to April 2010. During this El Niño period, five birds travelled more than 2500 km south to tropical North Pacific waters (between 0° and 15° north latitude, and spanning 60°, from 105° to 165° west

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longitude), which were areas associated with elevated primary productivity in the equatorial counter-current.

**Matt McKown** (University of California Santa Cruz) developed hardware and software for automatically detecting Newell’s Shearwaters, Hawaiian Petrels, and Band-rumped Storm-Petrels on Kauai. The system uses song meters and a customized MATLAB software macro. With further development, this product has considerable potential for cost-effective presence/absence auditory surveys for birds, amphibians and other biota.

**Jeff Troy** (Texas State University) and **Nick Holmes** are studying Newell’s Shearwater habitat suitability models, including modeling of the light intensities that procellariid fledglings would be exposed to within a watershed during their dispersal to the sea.

**Lindsay Young** (Pacific Rim Conservation) is finalizing construction of a predator-proof fence to protect Laysan Albatrosses (*Phoebastria immutabilis*) and Wedge-tailed Shearwaters (*Puffinus pacificus*) on the island of Oahu. Predator removal will follow in the winter of 2010. She continues long-term demographic monitoring of Laysan Albatross and Red-tailed Tropicbirds (*Phaethon rubricauda*) on Oahu, and with co-principal investigators she continues at-sea tracking of Wedge-tailed Shearwaters (*Puffinus pacificus*), Red-tailed Tropicbirds, and Red-footed and Brown boobies (*Sula sula* and *S. leucogaster*) on Lehua Islet off Niihau.

**John Klavitter** (U.S. Fish and Wildlife Service) reports a variety of seabird monitoring and research on Midway Atoll National Wildlife Refuge in 2010. Adult survivorship and reproductive success of Laysan and Black-footed (*Phoebastria nigripes*) Albatrosses, and Red-tailed Tropicbirds were monitored in several plots throughout the atoll. An atoll-wide census of Laysan and Black-footed Albatross nests was carried out. They observed courtship behavior of a recently established pair of Short-tailed Albatrosses (*Phoebastria albatrus*) and that of a third, unpaired individual. A calling station for Tristram’s Storm-

Petrels (*Oceanodroma tristrami*) and Bulwer’s petrels (*Bulweria bulwerii*) was maintained; individuals of both species were regularly sighted. Five hundred albatross boluses were collected for outreach and education purposes. Geolocator tags were attached to adult Laysan and Black-footed albatrosses, and satellite transmitters were attached to fledgling Laysan albatrosses. And blood samples were collected from Laysan albatrosses for disease monitoring (in collaboration with the U.S. Geological Survey).

**David Duffy** (University of Hawaii Manoa) published a history of seabird management in the Hawaiian Islands in *Waterbirds* 32:193-207. A review of feral cats in the Pacific is in the peer-review stage. He is still plodding along on a review of climate change and Hawaiian seabirds, with colleagues from the School of Ocean and Earth Science and Technology at University of Hawaii at Manoa. And he still has dreams of fieldwork in the coming year.

**Lisa T. Ballance** and **Robert Pitman** (National Oceanic and Atmospheric Administration; NOAA) continue to lead at-sea surveys of seabird distribution and abundance in the eastern Pacific. From August to November 2010, two NOAA research vessels (*McArthur II* and *Sette*) surveyed the Exclusive Economic Zone of the Hawaiian Archipelago for the Hawaiian Islands Cetacean and Ecosystem Assessment Survey. This project repeats the 2002 cruise conducted in the same region and uses similar methods. Seabird data were collected by field experts **Michael Force**, **Sophie Webb**, **Dawn Breese**, and **Scott Mills**. The surveys are a joint project of the Southwest and Pacific Islands Fisheries Science Centers. See <http://swfsc.noaa.gov/prd-hiceas.aspx> for more details.

the project “Fisheries, albatrosses and petrels: Evaluating the bycatch, distribution and abundance of seabirds in Peru.” They evaluated seabird bycatch through interviews and observations on board ships. The interview data in the present study suggest that seabird bycatch occurred. However, not a single seabird was captured incidentally during the observations on board, probably because observation effort is small in relation to the total number of hooks used in Peru. Only 0.41% of the 320,000 hooks deployed in a year were observed. This study was funded by Agreement on the Conservation of Albatrosses and Petrels, American Bird Conservancy, and Rufford Small Grants. Co-researchers on this study are Luis Paz Soldan and Raul Sanchez-Scaglioni.

The fishery for Peruvian anchovy (*Engraulis ringens*) is one of the biggest on earth. In spite of the size of this fishery, there is no information about interaction between seabirds and the industrial fishery in Peru. The project “Interactions between marine wildlife and the industrial anchovy fishing fleet” is funded by the Center for Environmental Research and Conservation and Idea Wild.

**Luis Paz Soldan** leads the project “Conservation of Humboldt Penguin in Pachacamac Island (Lima, Peru).” **Raul Sanchez-Scaglioni** and **Liliana Ayala** are co-researchers who are monitoring and evaluating threats to this colony of the Humboldt Penguin (*Spheniscus humboldti*), which is the second largest in Peru. They will obtain information about relative abundance and threats, including fishing with explosives and intentional and incidental capture. They are training two young pre-graduate students in seabird field research. The results will help the authorities in charge of managing islands and headlands. The project is funded by Conservation International.

**Liliana Ayala**, **Luis Paz Soldan**, and **Raul Sanchez-Scaglioni** have participated in several technical meetings: Workshop and Symposium Antarctic-South American Interactions in the Marine Environment (ASAI), the Fifth Latin American Symposium of Antarctic

## LATIN AMERICA

Compiled by Jennifer Boyce

**Liliana Ayala** (Seabird Conservation in Peru) reports they have finished

Research, SCAR Open Science Conference, World Seabird Conference, and South American Workshop: Improving the Data Collection of Seabird Bycatch in the Onboard Observer Programs. Their experience in seabird conservation allows them to collaborate in the process of categorizing threatened species in Peru. Ayala is the coordinator of the seabird group, and they are preparing some fact sheets about threatened Peruvian seabirds. The final result will be a Presidential Decree with the list of threatened species in Peru.

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## ASIA

Compiled by **Yutaka Watanuki**

**Fujii Tadashi** and colleagues did at-sea surveys of seabird in the Seto Inland Sea of Japan. The purpose was to collect data for the preservation of these birds, in an area where little information is available. Arctic Loon (*Gavia arctica*), Pacific Loon (*G. pacifica*), and Japanese Murrelet (*Synthliboramphus wumizusume*) were the main focus. The molting pattern of the Japanese Murrelet was also observed.

**Kazama Kentaro** monitored the breeding biology and population numbers of Black-tailed Gulls (*Larus crassirostris*) at Rishiri Island, northernmost in Japan, in June 2010. The island supported more than 30,000 gulls (including non-breeders) this year. **Yutaka Watanuki, Motihiro Ito** and students continued monitoring seabirds at Teuri Island, Hokkaido. They found that no Black-tailed Gulls bred, some Japanese Cormorants (*Phalacrocorax capillatus*) laid eggs but no chicks fledged, and Rhinoceros Auklets (*Cerorhinca monocerata*) had lower success than average. His group also was working on diet, foraging trip duration, and POP contamination in Streaked Shearwaters (*Calonectris leucomelas*) breeding on Awa-shima Island in central Japan.

**Kyung Gyu Lee** reports that Shinan County and National Park Migratory Birds Research Center co-hosted the International Symposium, "Seabirds in Danger." Several foreign speakers were invited, including T. Yabe, D.E. Pearson, C.J. Donlan, and M. Nogales. One conclusion was that the impacts of introduced plants on colonies of Swinhoe's Storm-Petrels (*Oceanodroma monorhis*) are too severe. Now we are trying to establish a restoration committee.

The Korean Wild Bird Society (<http://www.kwbs.or.kr/>) monitored seabird bycatch in fisheries on the east coast of Korea for the first time. They found that at least ca. 1000 Ancient Murrelets (*Synthliboramphus antiquus*) were killed in Goseung, Sokcho, and Gangneung during the winter season of 2008-2009. The dead birds were found in the garbage at several ports.

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## OCEANIA AND THE SOUTHERN OCEAN

From other reports

**April Hedd** (with **Bill Montevecchi**, MUN) worked in the Falkland Islands in 2010. She retrieved Global Light Sensing (GLS) loggers from Sooty Shearwaters (*Puffinus griseus*) on Kidney Island, Falklands, with the goal of describing year-round movement patterns. In collaboration with **Al Baylis** (Falklands Conservation), April deployed GLS loggers on Black-browed Albatrosses (*Thalassarche melanophrys*) on Steeple Jason Island, Falkland Islands.

**Louise Blight** (Centre for Applied Conservation Research, University of British Columbia, Vancouver, BC) continued working with **David Ainley** (HT Harvey & Associates, Los Gatos, CA) and others of the Friends of the Ross Sea Ecosystem on three related projects: promoting the Ross Sea, Antarctica, as an international marine protected area; providing peer review of the Marine Stewardship Council (MSC) assessment

of the Ross Sea fishery for Antarctic toothfish (*Dissostichus mawsoni*); and contributing background documents to the Antarctic and Southern Ocean Coalition's official objection to MSC's proposed certification. For more information on the Friends of the Ross Sea Ecosystem, see [http://www.lastocean.com/community/join\\_forse/read](http://www.lastocean.com/community/join_forse/read)

**Michael Force** (Kelowna, BC) continued his long-term mid-summer pelagic seabird and marine mammal survey of the South Atlantic and the Drake Passage, between the eastern end of the Strait of Magellan and the South Shetland Islands. This is a collaboration with the US Antarctic Marine Living Resources Program, administered by the Southwest Fisheries Science Center, National Oceanographic and Atmospheric Administration, La Jolla, California.

**Kyle Morrison** (Massey University, Palmerston North, New Zealand) started his PhD research by spending mid-October 2009 to mid-January 2010 on New Zealand's sub-Antarctic Campbell Island. He is studying factors related to the dramatic population decline (>94% since the 1940s) of what was once the world's largest breeding colony of the Eastern Rockhopper Penguin (*Eudyptes filholi*).

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## INDIAN OCEAN

From other reports

**Michelle Kappes** (formerly at the University of California at Santa Cruz) and **Peter Kappes** are currently based at the Université de la Réunion, where Michelle is doing postdoctoral research with **Matthieu Le Corre** in the Laboratoire d'Écologie Marine. She is tracking seabirds at a regional scale in the western Indian Ocean, with the aim of identifying multi-species oceanic hotspots of biodiversity. She hopes ultimately to target areas for designation as pelagic marine protected areas. She has been conducting field work in the

Seychelles and on la Réunion, deploying Global Light Sensing (GLS) tags on Wedge-tailed Shearwaters (*Puffinus pacificus*) and White-tailed Tropicbirds (*Phaethon lepturus*). She also conducted a census of Wedge-tailed Shearwaters at St Joseph Atoll in the Amirantes Islands of the Seychelles.

Michelle has also been collaborating with **David Pinaud** and **Henri Weimerskirch** at the Centre d'Études

Biologiques de Chizé of the Centre National de la Recherche Scientifique on a study of resource partitioning in sympatric tropical boobies (*Sula* spp.) on Tromelin Island. Peter has been assisting Michelle and **Patrick Pinet** in deploying and retrieving GLS tags on shearwaters (*Puffinus* spp.), tropicbirds (*Phaethon* spp.), and petrels (Procellariidae) in the Seychelles and on la Réunion. He is working with **Ross**

**Wanless** of BirdLife South Africa, in collaboration with Matthieu Le Corre, to identify seaward extensions of Important Bird Areas in the French-administered Îles Éparses in the western Indian Ocean. He has also been volunteering with Société d'Études Ornithologiques de la Réunion, trying to locate Mascarene Petrel (*Pseudobulweria aterrima*) breeding sites.

## REGIONAL REPORT FOR 2009

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This Regional Report appeared in *Pacific Seabirds* 36(2), but parts were omitted. The report as originally submitted by S. Kim Nelson is printed below. The editor apologizes to Dr. Nelson for the problems.

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### ALASKA

#### SOUTHEAST ALASKA

**Kim Nelson** of Oregon State University (OSU), **Scott Newman** (FAO), **Darrell Whitworth** (California Institute of Environmental Studies), **Harry Carter** (Carter Biological Consulting), and **Trevor Haynes** and **Veronica Padula** (Oregon State University; now PhD students at the University of Alaska) completed their study on the health, activity patterns, foraging ranges, and habitat use of Marbled Murrelets (*Brachyramphus marmoratus*) in the Port Snettisham area of Southeast Alaska. They are currently writing final reports and manuscripts. **Blake Barbaree** (MSc student, OSU) is

beginning analyses and writing his thesis on murrelet home range size, activity patterns, and energetics.

#### ALEUTIAN ISLANDS

**Kim Nelson**, together with **Jeff Williams** (U.S. Fish and Wildlife Service) conducted surveys for *Brachyramphus* murrelets and other seabirds in the Near Islands group (Attu, Agattu and the Semichi islands—Shemya, Nizki and Alaid) in July and August 2009. These were a repeat of surveys by **John Piatt**, designed to determine the distribution and abundance of Marbled and Kittlitz's (*B. brevirostris*) Murrelets. Surveys were conducted from the M/V *Tiglax* at 1 nautical mile (NM), and 2 NM off Attu,

and from an inflatable Zodiac within 0.25 km of shore. We counted a total of 90 Marbled, 15 Kittlitz's, and 21 *Brachyramphus* sp. murrelets within 150 m of the M/V *Tiglax*, and 5, 14, and 8, respectively, within 100 m of the Zodiacs. Most (98%) of the birds were off the island of Attu. Counts were higher than in 2003, but comparisons of density estimates and distribution are ongoing.

Field support was provided by **Naomi Bargmann**, **Veronica Padula**, **Becky Sawyer**, **John Trapp**, **Barry Sampson**, **Catherine Berg**, **Rob Kaler**, and **Leah Kenney**. Logistical support was provided by the crew of the M/V *Tiglax*. This project was funded by the U.S. Geological Survey and USFWS.

# PUBLICATIONS OF THE PACIFIC SEABIRD GROUP

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**Abstracts** of papers and posters given at PSG meetings are published annually. Abstracts for meetings of 1974 through 1993 appeared in the PSG Bulletin (Volumes 2–20); for meetings of 1994 through 2003, in Pacific Seabirds (Volumes 21–30); and for meetings of 1997 and later, at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

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## SYMPOSIA

**SHOREBIRDS IN MARINE ENVIRONMENTS.** Frank A. Pitelka (Editor). Proceedings of an International Symposium of the Pacific Seabird Group. Asilomar, California, January 1977. Published June 1979 in Studies in Avian Biology, Number 2. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**TROPICAL SEABIRD BIOLOGY.** Ralph W. Schreiber (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Honolulu, Hawaii, December 1982. Published February 1984 in Studies in Avian Biology, Number 8. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**MARINE BIRDS: THEIR FEEDING ECOLOGY AND COMMERCIAL FISHERIES RELATIONSHIPS.** David N. Nettleship, Gerald A. Sanger, and Paul F. Springer (Editors). Proceedings of an International Symposium of the Pacific Seabird Group, Seattle, Washington, January 1982. Published 1984 as Canadian Wildlife Service, Special Publication. *Out of print; available free of charge at* [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**THE USE OF NATURAL VS. MAN-MODIFIED WETLANDS BY SHOREBIRDS AND WATERBIRDS.** R. Michael Erwin, Malcolm C. Coulter, and Howard L. Cogswell (Editors). Proceedings of an International Symposium at the first joint meeting of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Colonial Waterbirds 9(2), 1986. \$12.00. *Order from:* Ornithological Societies of North America, PO Box 1897, Lawrence, Kansas 66044; phone (800) 627-0629; no online orders.

**ECOLOGY AND BEHAVIOR OF GULLS.** Judith L. Hand, William E. Southern, and Kees Vermeer (Editors). Proceedings of an International Symposium of the Colonial Waterbird Society and the Pacific Seabird Group, San Francisco, California, December 1985. Published June 1987 in Studies in Avian Biology, Number 10. \$18.50. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**AUKS AT SEA.** Spencer G. Sealy (Editor). Proceedings of an International Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published December 1990 in Studies in Avian Biology, Number 14. *Available free of charge at* <http://elibrary.unm.edu/sora/Condor/cooper/sab.php>

**STATUS AND CONSERVATION OF THE MARBLED MURRELET IN NORTH AMERICA.** Harry C. Carter, and Michael L. Morrison (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Pacific Grove, California, December 1987. Published October 1992 in Proceedings of the Western Foundation of Vertebrate Zoology, Volume 5, Number 1. \$20.00. *Order from PSG Treasurer* (order form on last page), *or available free of charge at* [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**THE STATUS, ECOLOGY, AND CONSERVATION OF MARINE BIRDS OF THE NORTH PACIFIC.** Kees Vermeer, Kenneth T. Briggs, Ken H. Morgan, and Douglas Siegel-Causey (editors). Proceedings of a Symposium of the Pacific Seabird

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Group, Canadian Wildlife Service, and the British Columbia Ministry of Environment, Lands and Parks, Victoria, British Columbia, February 1990. Published 1993 as a Canadian Wildlife Service Special Publication, Catalog Number CW66-124-1993E. *Order free of charge from:* Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A OH3, Canada.

**BIOLOGY OF MARBLED MURRELETS—INLAND AND AT SEA.** S. Kim Nelson and Spencer G. Sealy (Editors). Proceedings of a Symposium of the Pacific Seabird Group, Seattle, Washington, February 1993. Published 1995 in *Northwestern Naturalist*, Volume 76, Number 1. \$12.00. *Order from PSG Treasurer* (order form on last page), or available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**BEHAVIOUR AND ECOLOGY OF THE SEA DUCKS.** Ian Goudie, Margaret R. Petersen and Gregory J. Robertson (editors). Proceedings of the Pacific Seabird Group Symposium, Victoria, British Columbia, 8-12 November 1995. A special publication compiled by the Canadian Wildlife Service for the Pacific Seabird Group. Published 1999 as Canadian Wildlife Service Occasional Paper number 100, catalog number CW69-1/100E. *Order free of charge from:* Publications Division, Canadian Wildlife Service, Ottawa, Ontario, K1A OH3, Canada, or available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**SEABIRD BYCATCH: TRENDS, ROADBLOCKS AND SOLUTIONS.** Edward F. Melvin and Julia K. Parrish (editors). Proceedings of an International Symposium of the Pacific Seabird Group, Blaine, Washington, 26-27 February 1999. Published 2001 by University of Alaska Sea Grant, Fairbanks, Alaska. Publication no. AK-SG-01-01. \$40.00. *Order from publisher.*

**BIOLOGY, STATUS, AND CONSERVATION OF JAPANESE SEABIRDS.** Nariko Oka (editor). Proceedings of an International Symposium of the Japanese Seabird Group and Pacific Seabird Group, Lihue, Hawaii, February 2001. Journal of the Yamashina Institute of Ornithology 33(2); Symposium (5 papers), pp 57-147, other papers pp. 148-213. In English with Japanese abstracts. \$75.00. *Order from PSG Treasurer* (order form on last page).

**OIL AND CALIFORNIA'S SEABIRDS.** Harry R. Carter (convener) and Anthony J. Gaston (editor). Proceedings of a Symposium of the Pacific Seabird Group, Santa Barbara, California, February 2002. Published 2003 in *Marine Ornithology* 31(1). Available free of charge at [www.marineornithology.org](http://www.marineornithology.org)

**THE BIOLOGY AND CONSERVATION OF THE AMERICAN WHITE PELICAN.** Daniel W. Anderson, D. Tommy King, and John Coulson (editors). Proceedings of a Symposium of the Pacific Seabird Group. *Waterbirds*, Volume 28. Special Publication 1, 2005. Published by the Waterbird Society. \$15.00. *Order from PSG Treasurer* (order form on last page).

**BIOLOGY AND CONSERVATION OF XANTUS'S MURRELET.** Harry R. Carter, Spencer G. Sealy, Esther E. Burkett, and John F. Piatt (editors). Proceedings of a symposium of the Pacific Seabird Group, Portland, Oregon, January 2005. Published 2005 in *Marine Ornithology* 33(2):81-159. Available free of charge at [www.marineornithology.org](http://www.marineornithology.org)

**SEABIRDS AS INDICATORS OF MARINE ECOSYSTEMS.** John F. Piatt and William J. Sydeman (editors). Proceedings of an International Symposium of the Pacific Seabird Group, Girdwood, Alaska, February, 2006. Published 2007 in *Marine Ecology Progress Series* Volume 352:199-309. Available free of charge at <http://www.int-res.com/abstracts/meps/v352/#theme>

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## TECHNICAL PUBLICATIONS

**EXXON VALDEZ OIL SPILL SEABIRD RESTORATION WORKSHOP.** Kenneth I. Warheit, Craig S. Harrison, and George J. Divoky (editors). Exxon Valdez Restoration Project Final Report, Restoration Project 95038. PSG Technical Publication Number 1. 1997. Available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

**METHODS FOR SURVEYING MARBLED MURRELETS IN FORESTS: A REVISED PROTOCOL FOR LAND MANAGEMENT AND RESEARCH.** Pacific Seabird Group, Marbled Murrelet Technical Committee. PSG Technical Publication Number 2. 2003. Available free of charge at [www.pacificseabirdgroup.org](http://www.pacificseabirdgroup.org)

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**Michelle L. Kissling**, U.S. Fish and Wildlife Service, 3000 Vintage Blvd, Suite 201, Juneau, AK 99801, USA. Telephone: (907) 780-1168, Fax: (907) 586-7154, e-mail: michelle\_kissling@fws.gov

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**Scott Hatch**, Biological Resources Division, U.S. Geological Survey, Alaska Biological Science Center, 1011 E. Tudor Rd., Anchorage, AK 99503 USA. Telephone: (907) 786-3529, fax: (907) 786-3636, e-mail: scott\_hatch@usgs.gov

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